Utah Department of Transportation Environmental Assessment Guidelines and Instructions for Authors and Reviewers

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Contents

Introduction to Environmental Assessment Guidelines and Instructions for Authors and Reviewers

This document is a companion document to the Utah Department of Transportation (UDOT) Environmental Assessment (EA) annotated template and is intended to be used by UDOT staff and consultants when preparing or reviewing National Environmental Policy Act (NEPA) EAs for UDOT projects. It includes detailed instructions for authors, editors, reviewers, and technical analysts to ensure that all UDOT NEPA EAs meet Federal Highway Administration (FHWA) requirements and adequately support a determination or findings.

EAs are prepared to: Determine the nature and extent of social, economic and environmental impacts for proposed actions that do not meet the requirements for categorical exclusion (CE) designation

- Provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement (EIS) or whether a finding of no significant impact (FONSI) is sufficient
- Serve as an early coordination document, providing interested citizens and resource agencies sufficient information to elicit reasonable comments that can be further addressed in an EIS.

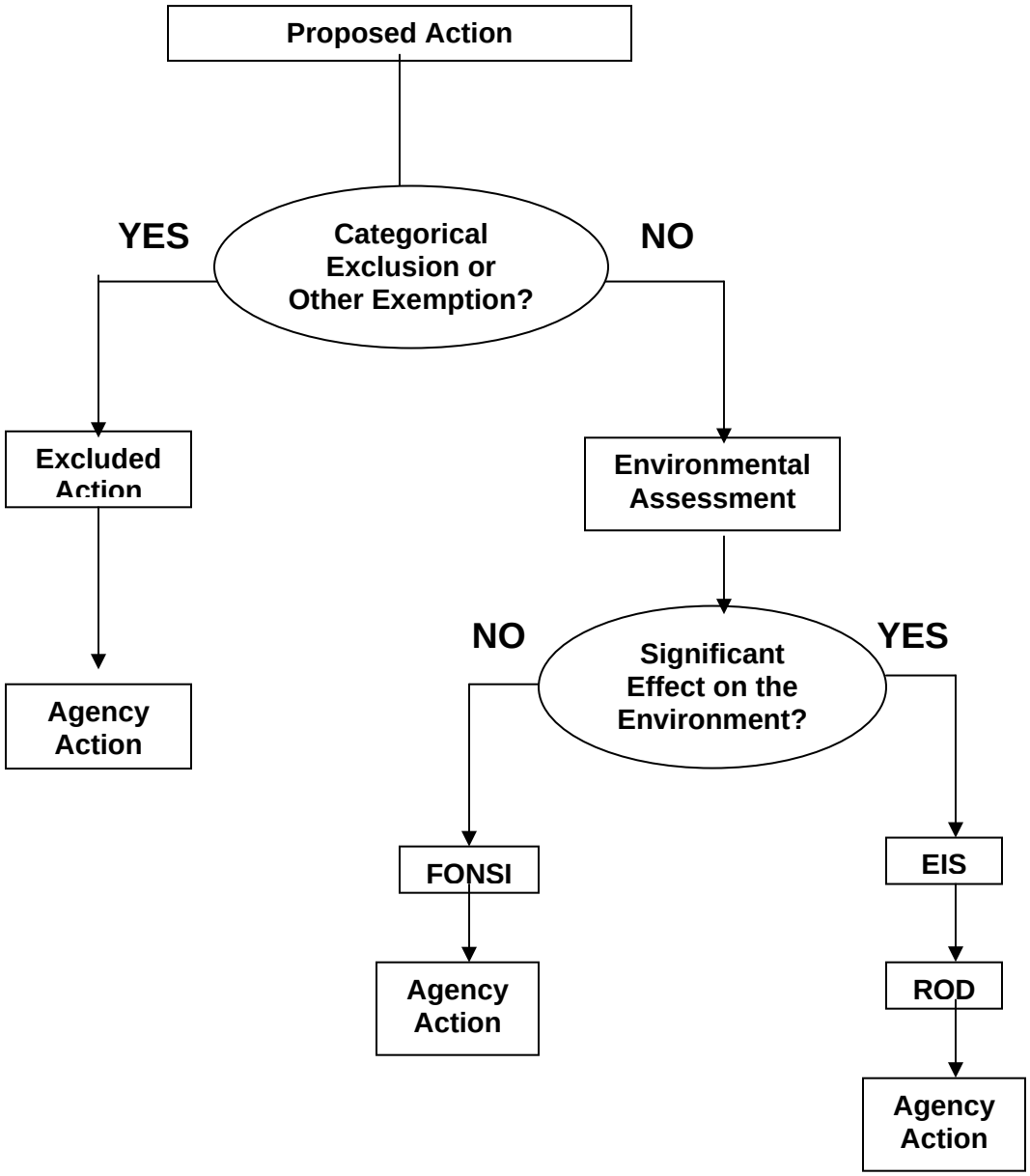
A FONSI usually completes the environmental assessment process and will typically be granted once the public involvement requirements are met and final endorsement by FHWA is received. A FONSI is not issued at the conclusion of the EA, when it is determined that significant environmental impacts will occur as a result of the project. In this case, an EIS is prepared. NEPA requires the preparation of an EIS if the proposed action has the potential to significantly affect the quality of the human environment. Flow charts depicting the NEPA document decision process and the process for an EA follow.

An EA as a concise public document and to avoid unnecessary length, an EA should use references to incorporate background data to support the discussions of the proposal and relevant environmental issues.

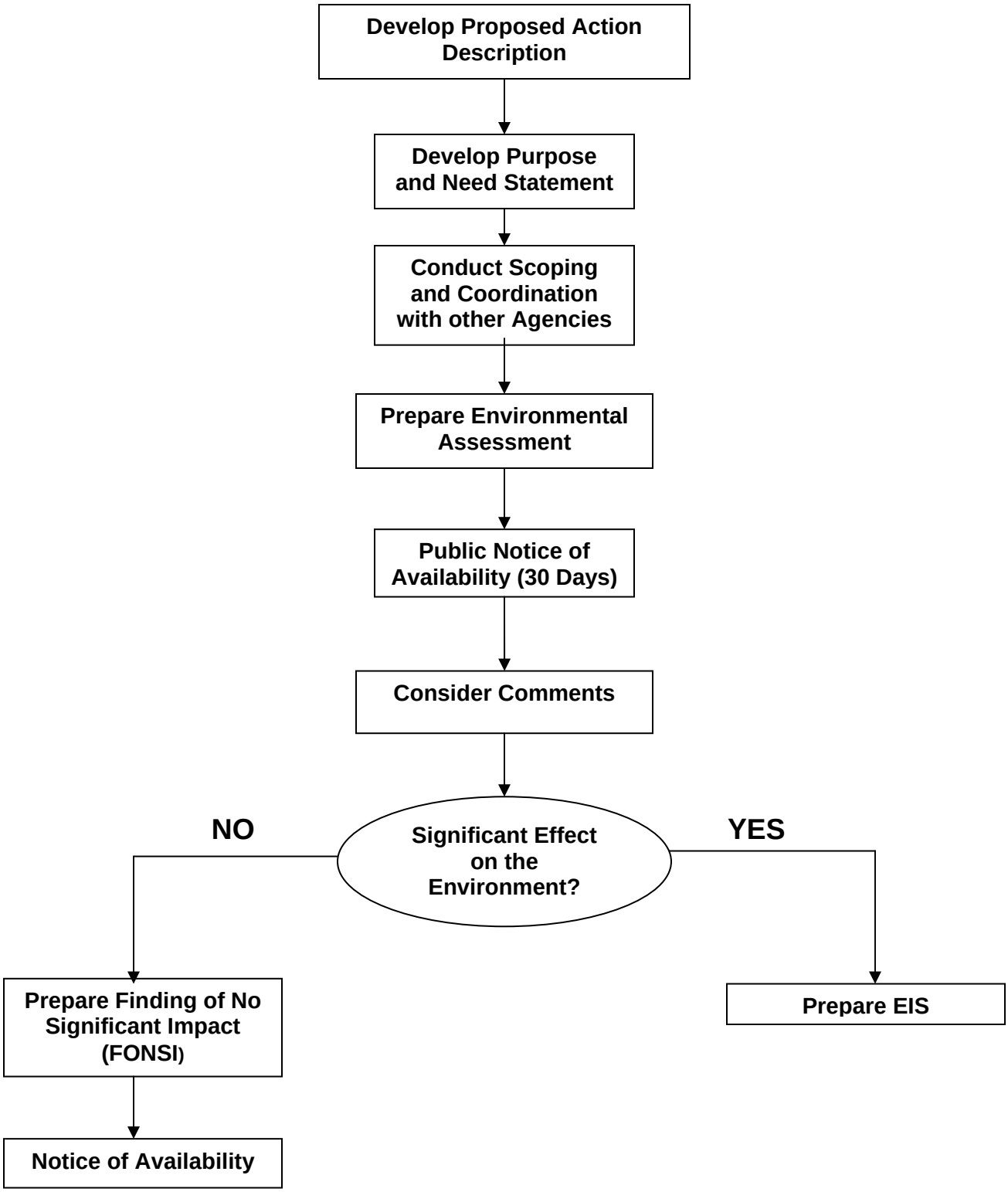
Also note that not all projects will affect all of the resources discussed in this guidance document. It is not necessary to include in the EA information on those resources not affected rather a simple statement under the resource heading may be supplied indicating that it is not affected. See the EA template Chapter 3.

Boxed text appearing in Arial font in the template are examples that can be used in almost any NEPA EA with minor project-specific modifications.

NEPA Document Decision Process



Environmental Assessment Process Flow Chart



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Content of Environmental Assessment

The instructions to authors and reviewers included herein are presented in the same order and under the same headings as those used in the EA Template. Boxed text appearing in Arial font is example text that can be used in almost any NEPA EA with minor project-specific modifications. The instructions contain guidance on what information/analyses need to be included in the EA, and guidance on sources of information to assist in developing the analyses.

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Cover Sheet

There is no required format for an EA cover sheet. The example included in the EA template is recommended as a guide. At a minimum, the following items should appear on the cover sheet:

- Name of project
- Approximate project limits (defined by project termini)
- County and State
- "Environmental Assessment" (and Section 4(f) Evaluation, if applicable)
- Legal citations pertaining to NEPA (and Section 4(f) if applicable)
- Contact information of FHWA and UDOT primary preparers
- Logos of FHWA and UDOT
- Date

Photos may be inserted on the cover or used as a background image to increase visual interest.

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Introduction

Use the example Introduction page included in the EA Template as a quick and useful reference. Be sure to include a description of the project location, the locations where copies of the document can be viewed, the date and location for the public hearing, the date comments on the EA are due, and the postal mail and email address where the comments should be sent.

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Title Sheet

The Title Sheet includes the same information as the Cover Sheet, except that a short descriptive phrase is added at the top that includes a verb such as “widen,” “improve” or “rehabilitate” to describe the project alternative(s). Contact information for FHWA and UDOT primary preparers should be included on this sheet. Photos and logos should not appear on the title sheet.

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Summary

The summary is optional. When considering whether to include a summary, attention should be given to the complexity of the project and its associated environmental impacts. A summary may not be appropriate for small, non-complex projects.

When preparing a Summary, include the following information:

- A brief description of the proposed action, including route, termini, type of improvement, number of lanes, length, county, city, state, and other information as appropriate.
- A description of any major actions proposed by governmental agencies in the same geographic area as the proposed action.
- A description of all alternatives considered, including those eliminated from further consideration.
- A discussion of any areas of concern, controversy, or unresolved issues raised by agencies or the public.
- A list of other actions required for the proposed action such as permit approvals, land transfers, Section 106 agreements, etc.
- A matrix or table for comparing the environmental impacts and mitigation measures of each alternative, if more than one were included in the EA.
- A list of environmental commitments (mitigation measures) made for the project, if not included in the table or matrix.
- Graphics as appropriate for orientation and clarification.

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Table of Contents

Include all section and subsection headings. Include separate content lists for tables and figures. List all documents that are appended, adopted or serve as technical reports supporting the EA. An example of a table of contents for an EA is included in the template.

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Chapter 1
Purpose and Need

The primary objective of the Purpose and Need chapter is to clearly and convincingly explain the need for the proposed action. This chapter should discuss in detail the transportation problems the proposed project is intended to correct and the related problems that would continue or worsen if the project were not implemented. The length and complexity of the Purpose and Need chapter will be determined by the complexity and nature of the proposed project. Depending on the project, the Purpose and Need chapter can range from a few paragraphs to several pages.

The project "purpose" is the set of objectives that the proposed project is intended to meet. The "need" is the transportation deficiency that the project is intended to address. The description of the purpose and need should be broad enough to allow for consideration of more than one solution, but specific enough to allow identification of a reasonable range of alternatives. This will allow consideration of alternate alignments, design variations, and other modes.

A project's purpose and need may broaden and/or increase in specificity as the project progresses through its development phases. It is important for the project's purpose and need that continuity exist through each project development phase. A "corridor" study may also be used, if available. These documents can provide valuable information regarding traffic, systems linkages, etc.

Proposed Action

At the beginning of the Purpose and Need Chapter, include a summary description of the proposed action, including sufficient design detail to allow an accurate assessment of impacts without committing to specific details that are subject to refinement or change. Measurements such as lane, shoulder, or median widths, for example, may be omitted or expressed as a variable if not definitely known. Do not assume that potential design deviations will be approved at a future date. If more than one alternative is being considered, describe each at a comparable level of detail. Include graphics such as maps, illustrations, and exhibits.

Use the following list as a guide for preparing a description of the proposed action:

- Location, length, termini, and why termini are logical
- Number of lanes
- Median type/function
- Pavement or construction type
- Typical cross-sections
- Provisions for mass transit and HOV
- Interchanges, grade separations, at-grade intersections
- Retaining walls and bridges
- Right-of-way acquisition requirements
- Pedestrian and bicycle facilities

As part of the description of the proposed action, be sure to summarize important background information on the project, including proposed funding and consistency with the Statewide Transportation Improvement Program and any applicable long-range transportation plans.

Purpose of the Project

The project "purpose" is a set of objectives the project intends and a description of the specific objectives of the proposed action. The project purpose is used to identify decision factors to be used when comparing alternatives and selecting the preferred alternative. It is a clear but brief description of the proposed solution to the problem or deficiency identified in the need statement.

As you write the description of the project purpose, make sure the project purpose is:

- Consistent with transportation goals and objectives (mobility, safety, capacity)
- A reasonable expenditure of public funds (benefit: cost)
- Broad enough to allow a reasonable range of alternatives
- Achievable and unbiased

Begin by outlining the purpose of the project. Each objective comprising the purpose may be bulleted and should be no more than two sentences (see examples below):

- To transfer through-vehicle trips to the regional highway system.
- To provide congestion relief in order to improve traffic flow on the regional transportation system.
- To be consistent with existing and planned local development. Note: Neither the UDOT nor FHWA has approval authority with regard to local plans.
- To provide alternative vehicular access to I-XX from US-XX.
- To help achieve the goals of the XYZ Regional Transportation Plan.

- To help reduce emissions from transportation sources.
- To provide a balanced circulation system and reduce out of direction travel.
- To improve the safety and operation of US-XX.
- To achieve route continuity.

Need for the Project

The project "need" is the transportation deficiency that the project was initiated to address. Discuss the following categories of needs as appropriate for your particular project. Helpful hints are provided explaining where relevant information and data on each topic can be obtained. Each "need" topic listed for the project should be supported by a presentation of data and/or other information supporting that need (e.g., accident data, traffic volumes, level of service, or travel times). Please refer to FHWA Technical Advisory T6640.8A for additional detail on the topics listed below.

Capacity, Transportation Demand, and Safety

Is the present facility inadequate for existing traffic? Will the proposed action alleviate traffic congestion? Include relationship to any regional, state or local transportation plans. Are the existing accident rates excessively high? How will the proposed action decrease the accident rate?

Information on capacity and demand can be obtained from traffic forecasting staff. For most cities and counties, traffic forecasting staff members are in the community development, planning, public works, or transportation department. They coordinate with the local Metropolitan Planning Organizations (MPOs) on traffic modeling. The circulation element of city and county comprehensive plans should also contain traffic data. Regional population forecasts are usually prepared by the MPO as well. Each UDOT district should have an accident data coordinator within its traffic division. Contact the data coordinator to get the needed accident data, and the traffic or design engineer should provide the interpretation of that data. Be sure to use the most current data in the need statement. The Professional Engineer (PE) should be able to provide information regarding how the project will improve safety. This information should be as specific as possible.

Roadway Deficiencies

Is the proposed project required to correct existing roadway deficiencies (e.g., substantial geometric load limits on structures, inadequate cross-section, or high maintenance costs?) How will the project improve the deficiencies?

The information for this section is primarily the responsibility of the PE. The PE will have information regarding roadway deficiencies and proposed corrections and may need to coordinate with UDOT Structures if bridges or other structures are involved. Information on maintenance problems can be obtained by contacting the maintenance office in the project area.

Social Demands or Economic Development

What projected economic development/land use changes indicate the need to improve or add to the highway capacity? Consider new employment, schools, land use plans, recreation, etc.

Sources for these topics include city and county planning offices, metropolitan planning organizations/regional transportation planning agency, and state, local and regional offices of economic development, and city/county chambers of commerce.

Legislation

Is there a federal, state, or local governmental mandate for action?

Information on legislation (i.e., state laws, county/city ordinances or resolutions) that pertains to the proposed project can be obtained directly from the appropriate jurisdiction.

Modal Interrelationships and System Linkages

How will the proposed action interface with air and rail facilities and mass transit services?

Coordinate with regional transportation planning staff, review route development plan and transportation corridor reports, contact local agencies for transit information and circulation elements from comprehensive plans, and review regional transportation plans (RTP) available from MPOs (the district/region planning office may also have copies and many RTPs are available on-line). Information on bike lane systems, park and ride facilities, ridesharing, and mass transit can be obtained from local government planning departments and transit agencies. Information on HOV lanes and ramp metering can be obtained from UDOT District Offices.

Some examples of need are listed below:

- A growing use of the local street circulation system for regional trips, leading to congestion of many streets and out of direction travel (increased travel distance).
- Increasing congestion on the regional transportation system, including Interstates ## and ##.
- Extensive existing and approved planned development that generates additional trips.
- Inadequate regional access to the XYZ area.
- Increased traffic accidents associated with congestion and use of local streets for regional trips.

Additional Guidance on Purpose and Need

- FHWA memo on Purpose and Need in Environmental Documents, Sept. 18, 1990, see: http://www.fhwa.dot.gov/environment/guidebook/vol2/doc7d.pdf

- FHWA Technical Advisory T6640.8A, Oct. 30, 1987, see: http://www.fhwa.dot.gov/legsregs/directives/techadvs/t664008a.htm
- Guidance on Purpose and Need, July 23, 2003, Memo from FHWA.
- UDOT Purpose and Need Guidance, see: http://udot.utah.gov/download.php/tid=288/UDOT_Guidance_on_Purpose_and_Need_Statements.pdf

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Chapter 2
Alternatives

FHWA Technical Advisory T6640.8A requires discussion of one or more build alternatives as well as the "no-build" alternative in a NEPA EA. The "no build" alternative is the "no action" alternative under NEPA. Viable alternatives must be discussed in equal detail. The discussion of alternatives considered but not carried forward into the EA must be identified along with the reasons for eliminating them from further consideration. Be sure to describe the methodology and criteria used to develop and evaluate the viable alternatives and alternatives considered but eliminated from further consideration. The EA must also consider transportation system management (TSM) and transportation demand management (TDM) strategies that could maximize the capacity of the existing transportation system and possibly eliminate or postpone the need for the proposed project. The FHWA Technical Advisory T6640.8A dated October 30, 1987, Guidance for Preparing and Processing Environmental and Section 4(f) Documents, can be found at http://www.section4f/pdf_files/ta6640a.htm.

Proposed Action

This section should include a brief restatement of the proposed action and purpose and need described in Chapter 1. Use a map or maps to show the general alignments of the proposed build alternative(s). If the proposed project includes more than one build alternative, consider adding a brief introductory paragraph similar to the example shown in the EA Template under this same subheading.

Independent Utility and Logical Termini

When discussing alternatives, ensure that the discussion is consistent with the "independent utility and logical termini" requirements of FHWA. Federal law (23 CFR 771.111(f)) requires that each proposed transportation project evaluated in a NEPA document meet the following criteria:

- Connect logical termini and be of sufficient length to address environmental matters on a broad scope. In other words, provide assurance that the project limits have not been foreshortened from a more productive segment length just to avoid underreporting an environmental impact that will be unavoidable in a future phase.
- Have independent utility or independent significance (be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made)

- Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements. In other words, don't foreclose future potential for adding HOV lanes, bicycle lanes, widening in the median, bus pullouts, accommodating transit vehicles (e.g., bus or rail).

A problem of segmentation may arise if a transportation need extends throughout an entire corridor, but environmental issues and transportation need are inappropriately discussed for only a segment of the corridor.

A discussion of logical termini and independent utility, including cases studies can be found on FHWA's website at: http://www.environment.fhwa.dot.gov/projdev/tdmtermini.asp.

Alternative(s) Considered but Eliminated from Further Consideration

Discuss the process used to develop and screen alternatives. Present the alternatives screening criteria, including ability to meet the project purpose and need, and any other criteria used to evaluate potential reasonable alternatives (e.g., wetlands, Section 4(f) properties, cost, engineering logistics, environmental impacts, context sensitive design). Briefly describe the alternatives that were considered but eliminated from further discussion. Provide the rationale for those eliminated from further consideration. If appropriate, use maps or other graphics to show the locations of the alternatives considered but rejected.

For some projects, TSM, TDM, and modal alternatives may be considered reasonable alternatives at first glance, but are eliminated as viable alternatives. Include a brief discussion in the environmental document that they were considered but eliminated and explain why.

Proposed Build Alternative(s)

Describe the major project features of the proposed build alternative(s). Include a map or maps showing the location and major features of the proposed action. If more than one build alternative is being considered, make sure the names of the various alternatives are distinct and will not be easily confused with each other by the public or decision makers. Keep the names of the alternatives consistent throughout the document. Include a discussion of any utility relocation. Make sure to label all locations referenced in the text. Include typical cross-sections and typical profiles as appropriate to help the reader understand the build alternatives. Make sure the project descriptions in the environmental document, Engineering and Design Report, and technical studies match. When projects are improvements to existing facilities, make sure that mapping shows both existing and proposed rights-of-way.

No-Build Alternative

The No-Build Alternative provides a baseline for comparing impacts with the other alternatives. The No Build Alternative assumes that the proposed action is not

implemented and is also referred to as the NEPA No Action Alternative. No-Build alternative typically includes short-term minor safety and maintenance activities that maintain continued operation of the existing and other planned and programmed transportation improvements. Information on planned and programmed transportation improvements can be obtained from local public works departments, transit agencies, UDOT District Offices, and MPOs. The No-Build Alternative will be defined as part of the transportation analysis.

TSM/TDM Alternative

TSM strategies consist of actions that increase the efficiency of existing facilities; they increase the number of vehicle trips a facility can carry without increasing the number of through lanes. Examples of TSM strategies include ramp metering, auxiliary lanes, turning lanes, reversible lanes and traffic signal coordination. TSM also encourages automobile, public and private transit, ridesharing programs, and bicycle and pedestrian improvements as elements of a unified urban transportation system. Modal alternatives integrate multiple forms of transportation modes such as pedestrian, bicycle, automobile, rail, and transit.

TDM focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled as well as increasing vehicle occupancy. It facilitates higher vehicle occupancy or reduces traffic congestion by expanding the traveler's transportation choice in terms of travel method, travel time, travel route, travel costs, and the quality and convenience of the travel experience.

Sources of information on potential TSM/TDM strategies include local and regional transit agencies, light rail and commuter rail operators, local or regional rideshare agencies and vanpool programs, UDOT District Offices, and MPOs. These alternatives may not be considered reasonable “stand alone” alternatives, but it may be reasonable to incorporate some TSM and TDM strategies as project components of the proposed action. Also MPOs may have TSM/TDM strategies identified within their long-range transportation plans.

Preferred Alternative

When a proposed Preferred Alternative (PA) has been identified at the “draft” EA stage, it must be disclosed (see suggested wording in the EA Template). Explain in some detail why UDOT/FHWA identified that alternative as the PA. For larger or more complex projects, the PA is not typically identified until after the circulation of the draft environmental document. If local governments or organizations have voiced a preference for a particular alternative, include a statement of that preference. If there is any opposition to the project or any of its alternatives, include that information under this heading as well.

Future Transportation Conditions

This is where future traffic conditions, with and without the proposed project, should be described. Using information from the Transportation Technical Report, summarize the performance of each alternative (including No Build and TSM/TDM alternatives) using

standard operational metrics, such as travel time, screen line volumes, level of service, queue lengths, accident frequency, mode split, etc.

Related Actions

If there are related actions to the proposed action, such as other transportation improvements or a planned development, they should be disclosed in this section.

Chapter 3

Affected Environment, Environmental Consequences, And Avoidance, Minimization, And/Or Mitigation Measures

The following section provides guidance for describing and analyzing each of the resource topics in the EA. This section evaluates and provides detailed information, as appropriate, on the Regulatory Setting, Studies and Coordination, Affected Environment, Impacts, and Avoidance, Minimization and/or Mitigation.

It is important to include in this chapter a list of all permits and approvals that will be needed, including waters and wetland permits, threatened and endangered species approvals (biological opinions, determinations), freeway agreements, and other permits. Provide the status of each approval. Consider using a simple table to display this information. See the example in the EA template.

Context Sensitive Solutions

Throughout each section, UDOT's Context Sensitive Solutions (CSS) principles should be evaluated to determine if special design considerations need to be evaluated to avoid resource impacts (e.g., partial takes of R/W leaving non-viable parcels or other changes adverse to the community's plans or design visions).

CSS Principles**:**

- Address the Transportation Need
- Be an Asset to the Community
- Be Compatible with the Natural and Built Environment

The philosophy and an in-depth description of the CSS guiding principles is available on UDOT's website:

http://www.udot.state.ut.us/index.php/m=c/tid=144

Land Use

Regulatory Setting, Studies and Coordination

Identify existing land use for the proposed project area and the surrounding area influenced by the project. Coordinate with state and local government agencies and contact individual communities to obtain information about local land use and zoning regulations. The Governor's Office of Planning and Budget (GOPB) partners with communities and serves as a tool connecting projects together across the state. Table 1 provides contact information for GOPB and other resources for determining land use and development in Utah.

Table 1. Land Use Plan and Development Trend Resources

Agency	Address	Telephone/Fax/Web Address
Bureau of Land Management, Utah State Office	PO Box 45155 Salt Lake City, UT 84145	801-539-4001 801-539-4013 fax
US Bureau of Reclamation, Planning Division	125 S. State Street, Room 6107 Salt Lake City, UT 84138	801-524-3685 801-524-5499 fax
US Forest Service, Forest Planning, Wasatch-Cache National Forest	8236 Federal Building 125 S. State Street Salt Lake City, UT 84138	801-236-3400
Hill Air Force Base, Planning & Contracts, Programming Section	75 CEG/CECX 7302 Wardleigh Road Hill Air Force Base, UT 84056	801-777-2145 801-777-1441 fax
Department of Housing and Urban Development, Salt Lake City Field Office	125 S. State Street, Suite 3001 Salt Lake City, UT 84138	801-524-6070 801-524-3439 fax 801-524-6909 TTY
Governor's Office of Planning and Budget	State Capitol Complex, Suite E210 PO Box 142210 Salt Lake City, UT 84114	801-538-1027 801-538-1547 fax
Department of Environmental Quality, Planning and Public Affairs	168 N. 1950 W., 2nd Floor PO Box 144810 Salt Lake City, UT 84114	801-536-4480 801-536-4457 fax
Division of Community Development	324 S. State, Suite 500 Salt Lake City, UT 84111	801-538-8700 801-538-8888 fax
Division of Forestry, Fire, and State Lands	1594 W. North Temple, Suite 3520 PO Box 145703 Salt Lake City, UT 84114	801-538-5555 801-533-4111 fax

Utah Department Of Transportation, Program Development	4501 S. 2700 W. Mail Stop 141200 Salt Lake City, UT 84114	801-965-4129 801-965-4551 fax
Utah Associations of Governments, State and Local Planning Section	116 State Capitol Salt Lake City, UT 84114	801-538-1566 888-854-4260 (toll free in Utah)
Public Lands Interpretive Association	6501 Fourth Street NW, Suite I Albuquerque, NM 87107	505-345-9498 877-851-8946 http://www.publiclands.org/

Utah Trust Lands Offices

Offices	Address	Telephone/Fax/Web Address
Main Office	Main Office 675 E. 500 S., Suite 500 Salt Lake City, UT 84102	801-538-5100 801-355-0922 fax
Development Office	675 E. 500 S., Suite 390 Salt Lake City, UT 84102	801-538-5178 801-328-9452 fax
Central Area	130 N. Main Richfield, UT 84701	435-896-6494 435-896-6158 fax
Southeastern Area	1165 S. Highway 91, Suite 5 Moab, UT 84532	435-259-3760 435-259-3755 fax
Southwestern Area	2303 N. Coral Canyon Blvd., Suite 100-A Washington, UT 84780	435-652-2950 435-652-2952 fax

Affected Environment

After determining surrounding land use, describe the proposed project area and the surrounding area into which impacts could extend . Provide maps delineating the boundaries. Classifications for the assessment of land use can be described in a variety of ways. A broad classification would use such terms as agricultural, non-farm, residential, commercial, industrial, idle, or special. Quite often these general uses are separated into more detailed categories (e.g., high-density single family, low-density single family, heavy industrial). Also, many of the terms employed for classifying land use are similar to those used in zoning codes. It is preferable to use the terms in the Standard Industrial Classification System (SIC) such as (a) agricultural, forestry, fishing; (b) mining, (c) manufacturing; (d) transportation, communication, utilities; (e) wholesale and retail trade; (f) services; (g) government; (h) finance and insurance. The U.S. Dept. of Labor, Bureau of Labor Statistics, uses the SIC terms in reporting data.

Impacts

Discuss anticipated direct effects to the existing land use(s) and effects to development potential both in and adjacent to the project area. The land use impact analysis should

address the consistency of the proposed alternatives with the comprehensive development plans adopted for the project area.

The indirect social, economic and environmental impacts of development induced by the project should also be discussed. Identify impacts to population densities, development patterns, and zoning. Identify any impacts to natural resources and cross-reference the applicable section in the EA .

Avoidance, Minimization, and/or Mitigation Measures

If inconsistencies with surrounding plans exist, coordination with the affected cities is encouraged. UDOT's analysis may be made available to local jurisdictions to use in updating or changing existing plans.

Farmland

Regulatory Setting, Studies and Coordination

Approximately 15,000 farms are present in Utah, totaling more than 11 million acres. State and local preservation programs protect more than 30,550 acres of this farmland. Any farmland identified as "prime," "unique," or of state or local significance is protected by federal and state legislation.

- The Farmland Protection Act of 1981
- http://www.nrcs.usda.gov/programs/fppa/
- Farmland Protection Policy Act, 7 CFR Part 658, July 5, 1984 (Amended 6/17/1994)
- http://www.nrcs.usda.gov/programs/fppa/pdf_files/7cfr658.pdf
- Prime and Unique Farmlands, 7 CFR Part 657, January 31, 1978 (Revised 1/1/2001)
- http://policy.nrcs.usda.gov/scripts/lpsiis.dll/M/M_440_523_F_Title7.htm
- Department Regulation 9500-3, Land Use Policy, March 22, 1983
- http://policy.nrcs.usda.gov/scripts/lpsiis.dll/M/M_440_523_F_DR9500-3.htm
- FHWA, Guidelines for Implementing the Final Rule of the Farmland Protection Policy Act for Highway Projects, May 1989
- http://environment.fhwa.dot.gov/guidebook/vol1/doc5b.pdf

Furthermore, Utah Code Title 17 Chapter 41 establishes Agriculture Protection Areas (APAs) that identify property in which normal agricultural uses and activities have been afforded the highest priority use status. (See: http://www.le.state.ut.us/%7Ecode/TITLE17/ 17_20.htm page 11.)

Early consultation with the Natural Resources Conservation Service (NRCS), and state and local agencies is recommended to determine if protected farmlands exist within the project area. To help determine if protected farmlands will be affected, a Farmland Conversion Impact Rating (FCIR) (Form AD-1006) Part 1 and Part 3 may be completed and submitted with maps to show the location of alternatives to the appropriate NRCS

field office. Please note: completing Form AD-1006 is not a requirement for every project (e.g., projects located within city limits are currently exempt). Check with the local NRCS office for an up to date list of exemptions and necessary procedures. Table 2 provides a list of all NRCS field offices in Utah and the counties that they serve.

Additionally, many county and city municipalities address the use, conversion and protection of farmland through local planning and zoning. Consult individual county and city zoning ordinances that may be applicable to the specific project.

Table 2. Natural Resources Conservation Service (NRCS) Utah State Directory

Utah State Office			
USDA-NRCS Wallace F. Bennett Federal Building 125 S. State Street, Room 4402 Salt Lake City, UT 84138-1100		801-524-4550 801-524-4403 fax	
County Offices			
County	**Service Center**	**Address**	**Telephone/Fax/Web Address**
Box Elder County *(Also serving Cache, Rich, Weber, Morgan, and Davis Counties)*	Tremonton Service Center	85 S. 100 E. Tremonton, UT 84337	435-257-5402 435-257-1930 fax
Cache County	North Logan Service Center	1860 N. 100 E. North Logan, UT 84341	435-753-5616 435-755-2117 fax
Rich County	Randolph Service Center	195 N. Main PO Box 188 Randolph, UT 84064	435-793-3905 435-793-2745 fax
Weber County *(Also serving Morgan and Davis Counties)*	Ogden Service Center	2871 S. Commerce Way Ogden, UT 84401	801-629-0575 801-629-0474 fax
Tooele County	Tooele Service Center	185 N. Main St. Tooele, UT 84074	435-882-2276 435-882-0429 fax
Emery County *(Also serving Carbon County)*	Castle Dale Service Center	1120 N. Des-Bee-Dove Rd. Castle Dale, UT 84513	435-381-2300 435-381-5696 fax
Salt Lake County	Murray Service Center	1030 W. 5370 S. Murray, UT 84123-5437	801-263-3204 801-263-3667 fax
Summit County	Coalville Service Center	30 Main St. Coalville, UT 84017	435-336-5853 435-336-2132 fax
Uintah County *(Also serving Daggett and Duchesne Counties)*	Vernal Service Center	80 N. 500 W. Vernal, UT 84078	435-789-2100 435-789-4160 fax

Carbon County *(Also serving Daggett, Duchesne, Uintah, Emery, Grand, and San Juan Counties)*	Price Service Center	350 N. 400 E. Price, UT 84501	435-637-0041 435-637-3146 fax
Duchesne County *(Also serving Daggett, Uintah, Carbon, Emery, Grand, and San Juan Counties)*	Roosevelt Service Center	240 W. Highway 40 #333 Roosevelt, UT 84066	435-722-4621 435-722-9065 fax
Utah County *(Also serving Tooele, Wasatch, Carbon, Emery, and Grand Counties)*	Provo Service Center	302 E. 1860 S. Provo, UT 84606	801-377-6928 801-356-1237 fax
Juab County	Nephi Service Center	635 N. Main St. Nephi, UT 84648	435-623-0342 435-623-2368 fax
Sanpete County *(Also serving Millard County)*	Manti Service Center	50 S. Main St., Suite 3 Manti, UT 84642	435-835-4111 435-835-4113 fax
Millard County	Fillmore Service Center	65 W. 100 N. Fillmore, UT 84631	435-743-6655 435-743-5117 fax
Sevier County *(Also serving Piute, Sanpete, Millard, Wayne, Piute, Iron, Garfield, and Washington Counties)*	Richfield Service Center	340 N. 600 E. Richfield, UT 84701	435-896-5489 435-896-9339 fax
Beaver County	Beaver Service Center	620 N. Main Beaver, UT 84713	435-438-5092 435-438-2168 fax
Wayne County	Loa Program Delivery Point	150 S. Main St. Loa, UT 84747	435-836-2711 435-836-2364 fax
Iron County *(Also serving Kane, Garfield, and Washington Counties)*	Cedar City Service Center	2390 W. Hwy 56 Cedar City, UT 84720-4166	435-586-2429 435-586-0649 fax
Garfield County *(Also serving Kane County)*	Panguitch Service Center	225 E. Center St. Panguitch, UT 84759	435-676-8280 435-676-8432 fax
San Juan County *(Also serving Grand County)*	Monticello Service Center	32 S. 1st E. Monticello, UT 84535	435-587-2473 435-587-2104 fax
Washington County	St George Service Center	196 E. Tabernacle St. St. George, UT 84770	435-673-2381 ext 4 435-673-0312 fax

Additional Land Protection Resources

Resource	Division/Region	Address	Telephone/Fax/Web Address
American Farmland Trust	Rocky Mountain Region	PO Box 1417 Fort Collins, CO 80524	800-370-4879 info@farmland.org
US Department of Agriculture	National Agricultural Statistics Service	Room 5829-South, Washington, DC 20250	202-720-3878 800-727-9540 202-690-2090 fax
Utah Department of Agriculture		350 N. Redwood Road PO Box 146500 Salt Lake City, UT 84116	801-538-7101 801-538-7126 fax
The Nature Conservancy	Utah Field Office	559 E. South Temple Salt Lake City, UT 84102	801-531-0999 801-531-1003 fax

Notes: The Farmland Information Center maintains an ever-growing collection of laws, reports and literature related to farm and ranchland protection.
http://www.farmlandinfo.org/

Affected Environment

Obtain the FCIR and provide a description of any farmlands in the project area. Provide the amount of both Prime and Unique Farmlands in acreages, and discuss the type of agricultural production for all locations. If any farmlands of statewide importance exist, these should be noted here as well. Farmlands of statewide importance are those soils that clearly qualify for prime farmland and produce high sustainable yields.

Impacts

Provide a detailed summary of farmlands that will be directly impacted (i.e. converted) for each alternative, including the no-build, as a result of the proposed project. Provide a geographic location and an acreage amount for each conversion. Note the type of agricultural production that will be lost.

Provide a description for indirect impacts to farmlands such as development pressure, increased livestock predation by pets or restrictions on pesticide use and burning.

Avoidance, Minimization, and/or Mitigation Measures

In accordance with the Farmland Protection Policy Act (FPPA), coordination with the US Army Corps of Engineers (Corps) is required if any farmlands in the project area irreversibly convert wetlands on farmland (directly or indirectly) to nonagricultural use. Information about the FPPA is online at the NRCS web site: http://www.nrcs.usda.gov/programs/fppa/.

Farmlands at risk of being converted should be evaluated to determine if avoidance is possible. If avoidance is not possible, provide a bulleted list of mitigation measures developed as a result of coordination efforts with NRCS and the Corps. Also describe

measures that were evaluated and perhaps incorporated into the project design to avoid or minimize effects to farmlands. Mitigation measures may include:

- Ensuring additional farmlands are preserved in perpetuity.
- Working with individual farm owners to determine the farm's benefits under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (URAA)
- Providing compensation for the expense of re-establishing farm enterprises and for fair market value of the buildings and land.

The Corps must approve any farmland conversions of jurisdictional wetlands.

Table 3. US Army Corps of Engineers Contacts

District	Address	Telephone/Fax/Web Address
Intermountain Section Utah Regulatory Office	533 W. 2600 S., Suite 150 Bountiful, UT 84010	801-295-8380 801-295-8842 fax
St. George Regulatory Office	321 North Mall Drive, Suite L101 St. George, UT 84790	435-986-3979 435-986-3981 fax
Gunnison Basin Colorado Regulatory Office	400 Rood Ave., Rm. 142 Grand Junction, CO 81501-2563	970-243-1199 x11 970-241-2358 fax

Social Impacts

This section discusses considerations related to potential social impacts, including Environmental Justice impacts of a transportation project. Under NEPA implementing regulations, these impacts must be assessed and documented.

Social impacts may be broken into the following subsections:

- Community Character and Community Cohesion;
- Relocations;
- Public Facilities, Services and Utilities;
- Recreation and
- Environmental Justice Populations.

Sources of information that may be used for evaluating social impacts include the following:

- Community impact studies
  - Census data, General and Community Plans, social/economic reports, and field surveys.
- Demographic information:

- US Census Bureaus' website: http://quickfacts.census.gov/qfd/maps/utah_map.html
- Official website for the State of Utah: http://www.utah.gov/about/demographics.html

- Research conducted through contacting community leaders and local officials.

Community boundaries as perceived by local residents may be different than those delineated by an agency on a map. It may be beneficial to depict both if possible.

Community Character and Community Cohesion

Regulatory Setting, Studies and Coordination

Community character and community cohesion is addressed in county and city zoning and planning documents such as general or master plans. Consult individual county and city zoning and planning departments that may be affected by proposed project to learn of the specific requirements of each locale.

Affected Environment

Once the community boundaries and neighborhood or subdivision boundaries are identified, provide a description of each. Include demographic information, which can be obtained through census data and local community contacts. Any areas and properties (residential and commercial) that may be affected by the project, as well as how they would be affected, should be documented.

Impacts

Discuss direct temporary and permanent changes in the neighborhood continuity and community cohesion for various groups as a result of the proposed action. These changes may be beneficial or adverse and can result from dividing a neighborhood with a new or widened roadway, removing a community gathering place or icon, or cutting off streets and other travel routes. Additional information is available on FHWA's website:

- http://environment.fhwa.dot.gov/guidebook/gbvol1.htm

These physical changes can result in additional indirect impacts such as the redistribution of a population (loss or influx), changing social patterns and relationships, splitting neighborhoods, isolating a portion of an ethnic group, changed property values, or separation of residences from community facilities.

Avoidance, Minimization, and/or Mitigation Measures

Provide a bulleted list of any mitigation measures that are developed to maintain Community Character and Cohesion as a result of coordinating with community leaders and local officials. UDOT's Context Sensitive Solutions (CSS) guiding principles should be incorporated here as well. Overall, mitigation measures should aim towards

improving the quality of life in the community, upholding community values, and connecting the community together. Mitigation measures could include the following:

- Adjust the project design to reconnect portions of the community through additional roadways or trails.
- Preserve pedestrian circulation and aesthetics within the neighborhood.
- Enhance the cohesiveness of surrounding routes in the community.
- Reducing the project footprint and size to minimize the impact on the community (e.g., reduce the number of proposed lane additions from eight to six).

Relocations

Regulatory Setting, Studies and Coordination

Coordination with community leaders and local officials is essential, particularly when relocation is at stake. Relocation policy is provided in the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 as amended in 1987 and is available on FHWA's website: http://www.fhwa.dot.gov/realestate/ua.htm.

Utah's state relocation policy is provided in the Utah Code and Constitution/Title 57 -- Real Estate/Title 57 Chapter 12 -- Utah Relocation Assistance Act and is available at: http://www.le.state.ut.us/~code/code.htm

Provide a description of relocation studies performed and any coordination efforts currently underway. Studies associated with relocations should overlap with the Title IV and Environmental Justice section, which is described in detail on page 24.

Affected Environment

Describe socio-economic characteristics of the affected area. Include population characteristics (e.g., ethnicity, race, disabled, elderly, family, income level, owner/tenant status), businesses (numbers and types of businesses and farms), employment, availability of replacement sites, and long-term stability of the area.

Impacts

Discuss the potential for the project to directly result in relocation of residences or businesses. List all of the proposed acquisitions in a table, broken out by residential vs. business, and by full acquisition vs. partial acquisition. Whenever possible, use tables as they are easier for the reader to absorb.

Also address direct relocation impacts resulting in temporary and permanent changes in access including traffic service or patterns, pedestrian or bike access, and public transportation (bus stops). If any cross-streets are terminated or roads closed the document should reflect the views of the involved city or county on such street closings. If parking spaces are to be removed it is necessary to evaluate number of spaces taken, number remaining and related impacts. Also the document should discuss on-street parking availability (existing and proposed).

Consider indirect impacts by contacting local officials, housing experts, local economists, and realtors about potentially affected properties. Determine whether or not potentially affected properties would be difficult or prohibitively expensive to replace or to provide adequate relocation benefits to (e.g., cold storage warehouses, businesses with direct railroad connections, historic or architecturally unique businesses or residences, etc.) Contact local realtors to determine if there is sufficient replacement housing or commercial, retail or industrial space available within a reasonable distance of the impacted property. Discuss the availability of replacement housing, which must be safe and sanitary.

Determine if there are any potential situations where residential displacements would trigger hardship acquisitions (e.g., low-income housing units, which are in short supply and potentially requiring construction of replacement housing). If appropriate, cross-reference to Environmental Justice section.

Avoidance, Minimization and/or Mitigation Measures

State clearly that the acquisition and relocation program will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and that relocation resources are available to all relocatees without discrimination.

Public Facilities, Services and Utilities

Regulatory Setting, Studies and Coordination

Federal laws and FHWA regulations contained in title 23 of the United States Code and the Code of Federal Regulations, respectively, have been developed to govern when and how utilities may use public highway right-of-way, and under what conditions public funds may be used to relocate utility facilities to accommodate highway construction. 23 U.S.C. 109(l) deals with the accommodation of utilities on the right-of-way of Federal-aid highways. 23 U.S.C. 123 deals with reimbursement for the relocation of utility facilities necessitated by the construction of a project on any Federal-aid highway. Present utility regulations in part 645 of title 23 of the Code of Federal Regulations (cited 23 CFR 645) and non-regulatory supplements are contained in chapter I, subchapter G, part 645 of the Federal-Aid Policy Guide (FAPG) (http://www.fhwa.dot.gov/legsregs/directives/cfr23toc.htm). The FHWA also has several guidance documents:

- Program Guide: Utility Adjustments and Accommodation on Federal-Aid Highway Projects (http://www.fhwa.dot.gov/reports/utilguid/index.htm)
- Highway/Utility Guide (http://isddc.dot.gov/OLPWeb.ASP?WCI=DocInfo&WCE=id%3d10604%26oa%3dany%26cn%3dadvancedsearch%26cv%3dUPPER(%20d.title)%20LIKE%20'%25UTILITY%20GUIDE%25'%26fr%3d1%26lr%3d1%26rc%3d1&WCU)
- Utility Relocation and Accommodation: A History of Federal Policy Under the Federal-Aid Highway Program, Part I: Utility Relocation (http://ntl.bts.gov/lib/12000/12200/12228/12228.pdf)

- Utility Relocation and Accommodation: A History of Federal Policy Under the Federal-Aid Highway Program, Part II: Utility Accommodation (http://ntl.bts.gov/lib/12000/12200/12229/12229.pdf)

Affected Environment

Provide a description of any public facilities, including educational, government, and religious institutions, social services, and medical facilities in the project area. Table 4 provides resources to gather information on public facilities in Utah.

Table 4. Public Facility Research Information

Public Facility	Address	Telephone/Fax/Web Address
Utah Education Network	Eccles Broadcast Center 101 Wasatch Dr. Salt Lake City, UT 84112	801-581-2999 800-866-5852 resources@uen.org
Utah State Office of Education	250 E. 500 S. PO Box 144200 Salt Lake City, UT 84114	801-538-7500
Utah System of Higher Education	60 S. 400 W. Salt Lake City, UT 84101	801-321-7101
Utah Travel Council	Council Hall Salt Lake City, UT 84114	801-538-1324 Utah Travel Database: http://travel.utah.gov/trdatabase.html
Utah Department of Health	PO Box 141010 Salt Lake City, UT 84114	801-538-6101 801-538-9936 fax Listing of all services and programs: http://www.health.utah.gov/html/alphatest.html

Identify services and utilities presently available to the public in the project area; include services that are not located in the project area, but that could be affected by the project. Table 5 provides contact information for Public Services in Utah.

Table 5. State of Utah Public Service Contact Information

Public Service Contact	Address	Telephone/Fax/Web Address
Public Service Commission of Utah	Heber Wells Building, 4th Floor 160 E. 300 S. Salt Lake City, UT 84111	801-530-6716
Division of Public Utilities	PO Box 146751 Salt Lake City, UT 84114	801-530-6512 801-530-6650 http://www.commerce.utah.gov/

Impacts

Provide a description on project impacts—beneficial and adverse—to public entities. Address any direct changes from the project on travel times or access, including detours

and road closures, as they related to public facilities. Travel times and access could also improve as a result of the project (e.g., ambulance routes and bus routes).

Address indirect impacts that the project may result in such as the need for any additional public facilities, services, or utilities once the project is complete.

Avoidance, Minimization, and/or Mitigation Measures

Provide a bulleted list of any developed mitigation measures resulting from coordination with public entities. Examples of mitigation measures may include direct coordination with school districts, police and fire departments, water and sewer districts, telephone and cable companies, and other public service providers to minimize disruptions, delays and negative effects on emergency response time. Public notification of temporary road closures or service disruptions through signing and direct mail should also be considered.

Recreation Resources

Regulatory Setting, Studies and Coordination

State and local governments often obtain grants through the Land and Water Conservation Fund Act (LWCF) to acquire or make improvements to parks and recreation areas (16 USC Sections 460-4 through 460-11, September 3, 1964, as amended). Section 6(f) of the act prohibits the conversion of property acquired or developed with these grants to a non-recreational use without the approval of the U.S. Department of the Interior's (DOI's) National Park Service. Section 6(f) directs DOI to ensure that replacement lands of equal value (monetary), location, and usefulness are provided as conditions to such conversions. Consequently, where such conversions of Section 6(f) lands are proposed for transportation projects, replacement lands must be provided.

When identifying recreation resources in the project study area, it is important to identify if the resource(s) qualify for protection under Section 4(f) of the 1966 Department of Transportation Act (as amended and codified in 49 USC 303), or if grants were obtained through Section 6(f) the Land and Water Conservation Fund Act (LWCFA) to acquire or make improvements to the parks and recreation areas. Detailed information on Section 4(f) can be found in Chapter 4 Section 4(f) Evaluation of this guidance document.

Public trails, and planned facilities (formally designated as a park, recreation area or refuge) on land that is publicly owned and that may be included in a city or county master plan, can also qualify as resources eligible for protection under Section 4(f).

Early coordination and consultation with the FHWA Division office is recommended to ascertain whether Section 4(f) applies to the specific project being proposed and for assistance in the identification of resources eligible for protection under Section 4(f).

If there are no Section 4(f) or Section 6(f) resources within the project study area, explicitly state that in this section of the EA. If the project only requires a temporary occupancy of a Section 4(f) resource, include that information in the discussion of that resource.

Affected Environment

Identify all parks and recreational facilities within the project vicinity, including equestrian trails, recreation bikeways, and other recreational trails. Describe the type of activities, functions and features available at each facility, including the annual number of visitors or users. Identify if the resource is eligible for protection under Section 4(f) or if Section 6(f) applies and refer the reader to the Section 4(f) evaluation for detailed information. Table 6 provides contact information for the Division of State Parks and Recreation, which is a useful reference for determining if recreational resources occur in the project area. Also contact local municipalities and counties for other recreation resources that may be in the project area.

Table 6. Utah State Parks Contact Information

Agency	Address	Telephone/Fax/Web Address
Utah Department of Natural Resources, Division of State Parks and Recreation	1594 W. North Temple Salt Lake City, UT 84114	801-538-7220 parkcomment@utah.gov http://www.stateparks.utah.gov/

Impacts

Discuss in detail how the proposed project would impact each facility, including both beneficial and adverse impacts. Describe direct changes to access and capacity, in addition to indirect impacts to natural resources, including but not limited, to air, water quality, aesthetics, access and noise. If the resource has been identified as a Section 4(f) or 6(f) resource, refer the reader to the Section 4(f) evaluation for a description of the impacts to that resource. Also contact the local municipalities and counties for park information.

Avoidance, Minimization, and/or Mitigation Measures

Discuss any proposed measures to avoid, minimize or mitigate impacts. Provide a bulleted list of developed mitigation measures, which may include replacement or restoration of affected facilities, temporary relocation of ball fields or trails, and adequate notification of the public prior to closing or relocating any recreational facilities.

Crosscheck all information in this section with information in the Section 4(f) Evaluation (if applicable).

Environmental Justice Populations

Regulatory Setting, Studies and Coordination

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by President Clinton on February 11, 1994. This Executive Order directs federal agencies to take the appropriate

and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines.

The Federal-aid Highway Act of 1970: 23 United States Code 109(h), (http://www.fhwa.dot.gov/environment/109_h.htm), establishes guidelines for compliance with the Environmental Justice (EJ) component of NEPA. The effort to prevent discrimination must address, but not be limited to a program's impacts, access, benefits, participation, treatment, services, contract opportunities, training opportunities, investigations of complaints, allocations of funds, right-of-way, research, planning, and design.

The following information should be attained:

- Population served and/or affected by race, or national origin, and income level;
- Proposed steps to guard against disproportionately high and adverse effects on persons on the basis of race, or national origin; and,
- Present and proposed membership by race, or national origin, in any planning or advisory body that is part of the program.

Other guidance from the FHWA includes:

- FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (DOT Order 6640.23) (http://www.fhwa.dot.gov/legsregs/directives/orders/6640_23.htm)
- DOT Order on Environmental Justice to Address Environmental Justice in Minority Populations and Low-Income Populations (DOT Order 5610.2) (http://www.fhwa.dot.gov/environment/ejustice/dot_ord.htm)
- Implementing Title VI Requirements in Metropolitan and Statewide Planning (http://www.fhwa.dot.gov/environment/ejustice/ej-10-7.htm)

Additional studies and coordination efforts may be required to determine if minority populations are present within the project area and to ensure that EJ populations are adequately considered. Census alone is generally not adequate to identify all minority population locations. Data from public involvement, local comprehensive plans, and "windshield surveys" are examples where supplemental data can be obtained.

Affected Environment

If the determination is made that minority populations are present within the project area, provide definitions and locations of these populations. Provide a description of targeted outreach efforts to involve low income/minority population. Describe any special public involvement efforts being made to address literacy, language, transportation, schedule, childcare, and other barriers to involvement, and provide documentation of strategy and results (e.g., attendance and responses). Table 7 provides contact information to assist in researching EJ issues in the project area.

Table 7. Environmental Justice Contact Information

Agency	Address	Telephone/Fax/Web Address
Federal Highway Administration, Utah Division Office	2520 W. 4700 S., Suite 9A Salt Lake City, UT 84118	801-963-0182 801-973-0063 fax
US Environmental Protection Agency, Office of Environmental Justice	Mail Code: 2201A 1200 Pennsylvania Ave., NW Washington, DC 20460	202-564-2515 800-962-6215 202-501-0740
US Environmental Protection Agency, Region 8 (Utah)	999 18th Street, Suite 300 Denver, CO 80202-2405	303-312-6053 303-312-6049 fax
Utah Department of Human Services	120 N. 200 W., Room 319 Salt Lake City, UT 84103	801-538-4001 801-538-4016 fax

Table 8 below provides additional information on available materials used to assess EJ issues.

Table 8. Environmental Justice Materials

FHWA Environmental Justice website	http://www.fhwa.dot.gov/environment/ej2.htm
CEQ website	http://www.whitehouse.gov/ceq/
Final Guidance for Consideration of Environmental Justice in Clean Air Act 309 Reviews	http://www.epa.gov/Compliance/resources/policies/nepa/enviro_justice_309review.pdf
A Citizen's Guide to Using Federal Laws to Secure Environmental Justice	http://www.epa.gov/Compliance/resources/publications/ej/citizen_guide_ej.pdf
Final Guidance For Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses	http://www.epa.gov/Compliance/resources/policies/ej/ej_guidance_nepa_epa0498.pdf

Impacts

Identify possible impacts on the EJ populations for each action alternative, including the No Build, possible including displacement, relocation, or access limitations.

Indirect impacts to each population should also be considered, for example increases to air pollution, noise, and traffic.

Also describe any offsetting benefits. Include maps highlighting the location of alternatives overlaid with the general location of any minority and/or low-income populations within the primary study area. Do not provide specific locations of minority or low-income populations in the document or on the map. The locations can be disclosed to project team members only. If no low-income or minority populations have been identified, summarize all the efforts undertaken to identify such populations do not exist.

Avoidance, Minimization, and/or Mitigation Measures

After impacts to EJ populations are identified, avoidance and or mitigation measures should be established. The determination of disproportionately high and adverse effects to EJ populations is made after it has been determined that impacts remain after avoidance and mitigation measures are identified.

Department of Transportation Order 6640.23 issued by FHWA in December 1998, includes the following definitions:

- Adverse Effects: means the totality of significant individual or cumulative human health or environmental effects, including interrelated social and economic effects, which may include, but are not limited to: bodily impairment, infirmity, illness or death; air, noise, and water pollution and soil contamination; destruction or disruption of man-made or natural resources; destruction or diminution of aesthetic values; destruction or disruption of community cohesion or a community's economic vitality; destruction or disruption of the availability of public and private facilities and services; vibration; adverse employment effects; displacement of persons, businesses, farms, or nonprofit organizations; increased traffic congestion, isolation, exclusion or separation of minority or low-income individuals within a given community or from the broader community; and the denial of, reduction in, or significant delay in the receipt of, benefits of FHWA programs, policies, or activities.
- Disproportionately High and Adverse Effect on Minority and Low-Income Populations means an adverse effect that:
  - Is predominately borne by a minority population and/or a low-income population; or
  - Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low income population.

These measures should describe efforts to avoid, minimize, mitigate, enhance, or offset project impacts as they pertain to the Environmental Justice populations. List the mitigation measures in a bulleted format.

Economics

Regulatory Setting, Studies and Coordination

23 U.S.C. 109(h) (http://www.fhwa.dot.gov/environment/109_h.htm) mandates consideration of social and economic impacts to the human environment. CEQ regulation 40 C.F.R. 1508.14 requires that an EA must discuss economic and social effects of a project if these effects are directly related to effects on the natural and physical environment.

Conduct research on economics in the project area through coordination with local businesses and agencies. The Demographic and Economic Analysis (DEA) section of the Governor's Office of Planning and Budget manages, analyzes, and disseminates economic, demographic, and fiscal data. Each county in Utah has a County Assessor's

Office, which is responsible for examining all properties subject to that particular county's assessment. Contact information for each county can be found on the web at www.utah.gov/government/citycounty.html. Table 9 provides contact information for researching economic conditions in Utah.

Table 9. Economic Analysis Coordination Contacts

Agency	Address	Telephone/Fax/Web Address
Governor's Office of Planning and Budget, Demographic and Economic Analysis (DEA)	State Capital Complex, Suite E210 Salt Lake City, UT 84114	801-538-1027 801-538-1547 fax http://www.governor.utah.gov/dea/
Division of Economic Development	324 S. State Street, Suite 500 Salt Lake City, UT 84111	801-538-8700 877-488-3233 801-538-8888 fax www.goed.utah.gov
Utah State Tax Commission	210 N. 1950 W. Salt Lake City, UT 84134	801-297-2200 800-662-4335 801-297-7699 fax

Note: City and County information/links: www.utah.gov/government/citycounty.html

Affected Environment

Based on compiled research and coordination, provide a complete description of the economic climate in the project area. Include employment information, various types of business operations that occur, and information about taxes.

Impacts

Discuss direct economic impacts on the regional and local economy, such as the effects of the project on development, tax revenues and public expenditures, employment opportunities, accessibility, and retail sales. If impacts on the economic viability of affected municipalities are likely to be substantial, they should be discussed with a summary of efforts undertaken and agreements reached for using the transportation investment to support both public and private economic development plans. To the extent possible, this discussion should rely upon results of coordination with affected state, county, and city officials.

Identify indirect impacts on the economic vitality of existing highway-related businesses (e.g., gasoline stations and motels) and the resultant impact on the local economy, including established business regions, and address how the public and/or private sectors may be able to reduce or minimize such impacts.

Avoidance, Minimization, and/or Mitigation Measures

Provide a bulleted list of mitigation measures developed as a result of coordination with the local public and private sector.

Pedestrian and Bicyclist Considerations

Regulatory Setting, Studies and Coordination

Section 217 of Title 23 of the US Code calls for the integration of bicycling and walking into the transportation mainstream. FHWA encourages the development and implementation of bicycle and pedestrian plans as part of the overall transportation planning process and helps coordinate the efforts of Federal, State, metropolitan and other agencies to improve conditions for bicycling and walking. More information can be found on FHWA's website:
http://environment.fhwa.dot.gov/guidebook/chapters/v2ch2.htm

Title II regulations under the Americans with Disabilities Act (ADA) (1990) requires UDOT to apply specific access design standards, developed by the U.S. Access Board, when constructing or altering pedestrian facilities. The ADA Accessible Guidelines call for curb ramps to be provided wherever an accessible route crosses a curb. More information can be found on UDOT's website at:
http://www.udot.utah.gov/index.php/m=c/tid=584

The American with Disabilities Act (ADA) dictates that "no otherwise qualified individual with a disability in the United States shall, solely by reason of his or her disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." (49 CFR 27) Consult specifically ADA of 1990 (42 U.S.C. 12101-12213) at FHWA's website http://www.fta.dot.gov/library/legal/ada/FEDREG0729.HTM, ADA regulations (49 CFR parts 37 and 38), the regulations of the Department of Justice implementing titles II and III of the ADA (28 CFR parts 35 and 36).

Pedestrian and bicycle considerations may be researched through FHWA, various city and state plans, Utah Division of Parks and Recreation and UDOT's Bicycle and Pedestrian coordinator. In February 2001, UDOT approved "The Statewide Pedestrian and Bicycle Plan" as an element of the "Utah Department of Transportation Statewide Long Range Transportation Plan." This plan provides additional guidance when considering pedestrians and bicyclists (see Table 10 below).

Consult the FHWA Guidance: Bicycle and Pedestrian Provisions of Federal Transportation Legislation (http://www.fhwa.dot.gov/environment/bikeped/bp-guid.htm). This document addresses the bicycle and pedestrian components of the Transportation Equity Act for the 21st Century. Additionally consult local Metropolitan Planning Organizations (MPOs) (http://www.udot.utah.gov/index.php/m=c/tid=272) for specific local bicycle and pedestrian considerations. Compliance with section 504 for DOT recipients is also required. Consult the following guidance documents from FHWA, the U.S. Access Board and the U.S. DOT:

- Designing Sidewalks and Trails for Access, Part II, Best Practices Design Guide (http://www.fhwa.dot.gov/environment/sidewalk2/index.htm)
- Designing Sidewalks and Trails, Part I, Review of Existing Guidelines and Practices (http://www.fhwa.dot.gov/environment/sidewalks/index.htm)
- Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas (http://www.access-board.gov/outdoor/outdoor-rec-rpt.htm)

- Design Guidance, Accommodating Bicycle and Pedestrian Travel: A Recommended Approach (http://www.fhwa.dot.gov/environment/bikeped/design.htm)

Table 10. Resources for Pedestrian and Bicycle Information

Agency	Address	Telephone/Fax/Web Address
Utah Division of Parks and Recreation	1594 W. North Temple, Suite 116 Salt Lake City, UT 84114	801-538-7220
Bicycle and Pedestrian Coordinator, UDOT Program Development	4501 S. 2700 W. PO Box 143600 Salt Lake City, UT 84114-3600	801-964-4564 801-965-4551 fax
Federal Highway Administration, Utah Division Office	2520 W. 4700 S., Suite 9A Salt Lake City, UT 84118	801-963-0182 801-963-0063 fax

Notes: The Statewide Pedestrian and Bicycle Plan:
www.udot.utah.gov/progdev/bike/ApprovedRevBikePedPlan3.PDF
FHWA's Bicycle and Pedestrian Program website:
www.fhwa.dot.gov/environment/bikeped/index.htm

Affected Environment

Describe the pedestrian and bicyclist environment. Provide a description of current and anticipated uses of existing pedestrian and bicycle facilities relative to the project area. Discuss established travel routes used by each, average capacity of those routes, and any regular congestion that occurs. Include bicycle and pedestrian components from other plans.

Impacts

Discuss the potential direct impacts to said facilities and any possible direct or indirect impacts to the users. Discuss both adverse and beneficial changes in capacity, route adjustments, and congested areas. Describe any effects the proposed project may have on safety components of these facilities, enhancements and hazards.

Avoidance, Minimization, and/or Mitigation Measures

Document proposed measures to avoid or reduce adverse impacts. If new facilities are proposed, include reasons for providing the additional facilities (e.g., sidewalk will reduce the project access impacts to the community).

Air Quality

Regulatory Setting, Studies and Coordination

The regulatory setting for air quality is based on the federal level, transportation conformity level, regional and local levels.

The Clean Air Act (CAA) (42 U.S.C.§§ 7401-7671q) as amended in 1990 is the federal law that regulates air quality. It sets standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS are set by EPA and are the standards that have been established as the official ambient air quality standards for Utah. These standards include both primary standards to protect public health and secondary standards to protect public welfare (such as protecting property and vegetation from the effects of air pollution). Standards have been established for carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), and particulate matter that is 10 microns in diameter or smaller (PM10).

The CAA requires that all areas with consistent, widespread violations of the NAAQS be designated non-attainment areas. Non-attainment areas are areas out of compliance with the established air quality standards.

Maintenance areas are areas that have been in violation of the NAAQS and were originally designated non-attainment areas, but have not had a recorded violation in several years. The state can petition EPA to re-designate the area to "attainment". During the interim period between non-attainment status and attainment status the area is re-designated to a maintenance area. The state agency is required to prepare a Maintenance Plan to demonstrate that regional emissions can be reduced to ensure the area does not degrade back to non-attainment conditions. For air quality regulatory purposes, requirements for a maintenance area are the same as for a non-attainment area

The Transportation Equity Act (TEA-21) and the Clean Air Act Amendments require that all regionally significant highway and transit projects in air quality non-attainment areas come from a "conforming" transportation plan and transportation improvement program. A *conforming plan* is one that has been analyzed regionally for emissions of controlled air pollutants and is found to be within emission limits established in the State Implementation Plan. Transportation projects are said to "conform" if, both alone and in combination with other planned projects included in that transportation improvement program, the project would not result in any of the following.

- New violations of the NAAQS.
- Increases in the frequency or severity of existing violations of the NAAQS.
- Delays in attainment of the NAAQS.

For any given proposed highway project these requirements are generally demonstrated by a two-step process, which must be described in the NEPA environmental document for the proposed project. A mesoscale air quality assessment is conducted to demonstrate two requirements: 1) the combined traffic-related emissions from within the entire non-attainment area (including the emissions from the proposed project) are included in each Metropolitan Planning Organizations (MPO)'s periodic Conformity Analysis report, and 2) the combined emissions from within the non-attainment area are less than the allowable emission budgets set by the State Implementation Plan (SIP). In addition, a microscale air quality assessment (also called a project-level hot-spot analysis) is conducted to model short-term CO concentrations at modeling receivers adjacent to major intersections along the proposed project corridor. A list of MPOs can be found at UDOT's website at http://www.udot.utah.gov/index.php/m=c/tid=272.

The Utah Division of Air Quality (UDAQ) is responsible for permitting of air pollutant sources and for enforcing emissions to satisfy the NAAQS requirements. UDAQ is also responsible for coordinating with EPA to specify non-attainment areas, and for

preparation of the State Implementation Plan and Maintenance Plans. As part of those plans, UDAQ is responsible for developing emission budgets for future years to ensure future compliance with the NAAQS.

The MPOs are responsible for periodically conducting Transportation Conformity Analyses to demonstrate that the combined LRTPs conform to the emission budgets specified by the State Implementation Plan. Both the mesoscale evaluation completed by the MPOs and the project-level microscale evaluations completed for the NEPA document for individual projects are used to help determine whether the proposed project would be in conformance with the appropriate mobile-source pollutant budgets in approved State Implementation Plans.

Determine if the project is included in a currently conforming LRTP with no substantial changes in the design concept and scope as that used in the LRTP. If so, the project is deemed to be in conformity at the regional level.

For project-level conformity, determine if the project is located in an "attainment" area or a "non-attainment" or "maintenance" area. If the project is located in an attainment area, no further study is necessary. If the project is located in a non-attainment or maintenance area for a given pollutant, then additional air quality analysis and reduction measures with regard to that pollutant is required. Table 11 identifies agencies and websites to reference for assistance with determining the necessary level of conformity for the proposed project.

Table 11. Utah Air Quality Contact/Research Information

Agency	Address	Telephone/Fax/Web Address
Utah Division of Air Quality	150 N. 1950 W. PO Box 144820 Salt Lake City, UT 84116	801-536-4000 http://www.airquality.utah.gov/
Federal Highway Administration, Utah Division Office	2520 W. 4700 S., Suite 9A Salt Lake City, UT 84118	801-963-0182 801-963-0063 fax http://environment.fhwa.dot.gov/guidebook/chapters/v1ch1.htm http://wwwcf.fhwa.dot.gov/environment/aqupdate/index.htm
Official State of Utah Air Quality Rules		http://www.rules.utah.gov
Areas of Non-attainment and Maintenance		http://www.airquality.utah.gov/GRAPHICS/MAPS/non_attn.pdf
Utah State Implementation Plans (SIPS)		http://www.airquality.utah.gov/SIP/Sipcm4s.htm
UDOT Air Quality Hot Spot Manual		http://www.udot.utah.gov/download.php/tid=232/AirQualityHotSpotManual.pdf

Affected Environment

Describe the general climatic conditions of the project area. The Utah Center for Climate and Weather (UCCW) is a cooperative effort among educators and scientists, used for

sharing information about Utah's climate and weather. Other resources available include the Western Regional Climate Center and the Utah Air Monitoring Center.

Describe transportation-related air quality concerns in the project area and provide a summary of project related pollutants. Obtain this information from DEQ's Air Quality Division (see Table 12 below).

Table 12. Utah Air Quality and Climate Resource Information

Agency	Address	Telephone/Fax/Web Address
Utah Center for Climate and Weather	4351 S. Redwood Road Salt Lake City, UT 84123	http://www.utahweather.org/
Western Regional Climate Center	2215 Raggio Parkway Reno, NV 89512	775-674-7010 775-674-7016 fax http://www.wrcc.dri.edu/
Utah Division of Air Quality, Utah Air Monitoring Center	2861 West Parkway Blvd. West Valley City, UT 84119	801-887-0760 801-975-4009 Hot Line http://www.airquality.utah.gov/aq_home.htm

For a list of common air pollutants regulated by the EPA, reference the "1999 State Summary Table" on UDAQ's website, which lists all counties in Utah and the breakdown of the criteria emissions by source (Area/Non-Road Mobile, On-Road Mobile, and Point Sources). Criteria pollutants are those for which National Ambient Air Quality Standards (NAAQS) have been established. Criteria pollutants addressed in these tables are Particulate Matter (PM10), Sulfur Oxides (SOx), Nitrogen Oxides (NOx), Volatile organic compound(s) (VOCs), and Carbon Monoxide (CO) (Table 13).

Table 13. Air Emissions Inventory Definitions

Carbon Monoxide (CO)	A colorless, odorless, very toxic gas resulting from incomplete combustion. CO can reduce the oxygen content of the blood. It also causes dizziness, headaches, blurred vision, and slowed reactions.
Nitrogen Oxides (NOx):	Chemicals formed in high-temperature combustion processes. The substance is toxic by itself and can react to form ozone or PM10 in the form of nitrates. Nitrogen dioxide (NO2) is brownish red gas with a biting odor. It is highly irritating in high concentrations. Nitrogen dioxide is always accompanied by nitric oxide (NO).
Particulate Matter (PM10):	Any solid or liquid particle less than 10 microns in diameter suspended in the air. They can impair visibility and cause soiling of materials. PM10 irritates the sensitive lung tissue and can block small airways causing reduced breathing capacity of the lungs.
Sulfur Oxides (SOx):	An invisible gas with a pungent odor. At low concentrations, this gas can often be tasted before smelled. The major source of sulfur oxides is the combustion of sulfur-containing fuels, primarily coal and fuel oil. Sulfur dioxide is a toxic substance that can impair breathing.

Volatile organic compound(s) VOC:	Any compound of carbon (other than carbon monoxide, carbon dioxide, carbonic acid, metallic carbonates, metallic carbides and ammonium carbonate), which participates in atmospheric photochemical reactions. A company must report all reactive VOC emissions (including fugitive emissions). VOC emissions that are non-reactive are not reported.

From: UDAQ - Planning Branch - Air Emissions Inventory Definitions (http://airquality.utah.gov/PLANNING/Define.htm)

Discuss mesoscale (regional) and microscale (local) air quality concerns and include the CO analysis if such analysis is performed. Mesoscale air quality concerns address Ozone (O3), Hydrocarbons (HC) and Nitrogen Oxide (NOx) and are regional in nature. As such, meaningful evaluation on a project-by-project basis is not possible. Microscale analysis is performed to determine CO concentrations.

Address Regional Air Quality Conformity by providing a statement, detailing whether or not the project is included in a LRTP. (See Template for example wording.)

Impacts

Describe the direct air quality impacts for both the year of opening and design year. Identify the applicable standard and attainment status of the area for each pollutant and quantify the mesoscale and microscale operational air quality impacts. For projects where air quality carbon monoxide (CO) impacts are judged to be minimal or insignificant, a brief statement to this effect is sufficient. Air quality CO impacts are judged minimal or insignificant when the project CO contribution plus background level are known to be well below the one (1) hour and eight (8) hour National Ambient Air Quality Standard (or other applicable standard). The basis for the judgment of minimal or insignificant CO impacts, such as previous specific analyses for similar projects, previous general analyses for various classes of projects, or simplified graphical analyses, should be stated.

Also describe direct impacts from construction activities including fugitive dust from earthwork and other dust producing activities, slash burning, odors and emissions from construction equipment. If known describe potential indirect impacts from off-site asphalt batch plants, gravel plants and other temporary sources related to construction activities.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation measures will be required if the proposed project may impact air quality in a non-attainment or maintenance area. Provide a bulleted list of mitigation measures developed from coordination efforts with the EPA and the Division of Air Quality.

Identify Best Management Practices (BMPs) during construction such as the following:

- Covering soil stockpiles with fabric
- Use of chemical dust suppressants
- Minimizing the amount of disturbed surface
- Avoid construction on windy days

- Use street sweepers and water spray

Noise

Regulatory Setting, Studies and Coordination

UDOT's Traffic Noise Abatement policy (UDOT 08A2-1; revised March 8, 2004) establishes formal procedures for analyzing noise impacts from highway projects. The directive establishes procedures for conducting traffic noise studies, implementing noise abatement measures and coordinating with local municipalities and the public to ensure that all feasible and reasonable mitigation measures are incorporated into projects to minimize noise impacts and protect the public health and welfare. The procedures apply if a proposed project involves additional through lanes (added capacity), changes to the vertical or horizontal alignment, or a new alignment. UDOT's highway traffic noise prediction requirements, noise analysis, and noise abatement criteria are consistent with Utah Code 72-6-111 &112 and 23 CFR 772 - "Procedures for Abatement of Highway Traffic Noise and Construction Noise" as outlined in "Highway Traffic Noise Analysis and Abatement: Policy and Guidance" by FHWA, June 1995.

For planning purposes during preparation of the EA, a factor that needs to be considered for noise abatement is the public involvement/balloting procedure. UDOT's policy calls for the public involvement/balloting to be conducted prior to the final environmental document approval. The purpose of this procedure is to make sure the concerns of the affected communities are known to UDOT and that every effort to provide noise abatement to that community is taken. Special open houses, mailers and workshops may be involved in this process. UDOT will initiate this process by contacting the local municipalities and affected residents/landowners. To determine the desire for noise abatement from the affected residents and communities, a reasonable effort will be made to contact the owner by telephone, mailer or in person to explain the process and determine any special needs of the residents in casting a ballot for or against noise abatement. After the initial contact has been made and the process explained, the residents eligible to vote on the noise abatement will be sent ballots. The ballots include a deadline when they are to be returned, and if all ballots sent to the "front row" receivers are not returned by that deadline, a second ballot will be sent to those residents/landowners. Noise abatement will only be considered if 75% of the affected "front row" receivers and 67% overall (including "front row" receivers) of the affected residents/landowners who will receive a minimum reduction of 5 dBA, vote through balloting, in favor of the noise abatement. For additional details on the public involvement/balloting procedure, refer to the Traffic Noise Abatement policy UDOT 08A2-1; revised March 8, 2004.

Affected Environment

Using information from the Noise Technical Report, introduce the reader to the characteristics of noise, the nature of the logarithmic scale, typical sound source noise levels, and the relationship between sound level change and relative loudness and provide an overview of applicable noise regulations similar to the information presented in the paragraph above.

Identify land uses and sensitive noise receptors, particularly areas of frequent human use that would benefit from reduced noise levels and describe the existing noise at receptors measured during the highest traffic noise hour.

Impacts

UDOT considers traffic noise impacts to occur when either of the following conditions occurs at a sensitive land use area:

1. The design noise level is greater than or equal to the UDOT Noise Abatement Criterion (NAC) in Table 14 for each corresponding land use category; or
2. The design noise level is greater than or equal to an increase of 10 dBA over the existing noise level. This impact criterion takes effect regardless of the existing noise levels. Existing noise levels are defined as the noise levels (present conditions) at a receiver prior to the addition of the travel lanes or new construction on the adjacent transportation facility.

Table 14. UDOT Noise Abatement Criteria (NAC)

Activity Category	Leq(h), dBA*	Description of Activity Category
A	55 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	65 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	70 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands
E	50 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Notes: Based on FHWA Noise Abatement Criteria, 23 CFR 772

* Hourly A-Weighted Sound Level in Decibels, Reflecting a 2 dBA "Approach" Value Below 23 CFR 772 Values

Using information from the Noise Technical Report, summarize the finding of the noise model. Describe modeled future noise levels for each alternative and the no-build (design year traffic should be at least 20 years from the end of construction). Report if there is a substantial increase (10 dBA) in noise with the project and/or whether the noise equals or exceeds the NAC in Table 14. Include a table summarizing the results of the noise impact analysis and a map showing receptors and proposed wall/berm locations. A sample table is provided in the template.

Avoidance, Minimization, and/or Mitigation Measures

Identify noise abatement measures that have been considered for each impacted area. Noise reduction measures may include installing noise barriers, preserving or creating buffer zones, installing noise insulation in buildings, and using various traffic control measures such as prohibiting or restricting certain vehicle types or modifying speed limits. Noise contour mapping may be included as part of the document, coordinate with UDOT staff to determine if mapping is appropriate.

The overall goal of mitigation is to obtain a substantial noise reduction, which may or may not result in noise levels below the NAC levels. The two relevant criteria to consider when identifying and evaluating noise abatement measures to be incorporated in a project are feasibility and reasonableness. UDOT will provide mitigation for noise impacts if it is determined to be both feasible and reasonable.

Feasibility deals primarily with constructability and engineering considerations (e.g., Can a substantial noise reduction be achieved given the conditions of a specific location? Is the ability to achieve noise reduction limited by factors such as topography, access requirements for driveways or ramps, the presence of local cross streets, or other noise sources in the area?) A proposed noise barrier that will not achieve a minimum of 5 decibels of attenuation (positive noise reduction) for a simple majority of front-row (adjacent) receivers, under future conditions with the proposed project at the specific locale, is not considered feasible. In addition, preliminary and final design consideration should be given to the elements of safety and maintenance, and should be consistent with general American Association of State Highway and Transportation Officials (AASHTO) design principles.

Reasonableness is a more subjective criterion than feasibility. It implies that common sense and good judgment were applied in arriving at a decision (e.g., does the proposed noise abatement measure satisfy the cost criterion established under this policy?).

Geology, Soils, and Topography

Regulatory Setting, Studies and Coordination

There is no specific federal or state legislation with governing authority over the geology, soils and topography of Utah. Local cities and counties typically address these resources through zoning such as:

- Ordinances that limit development on slopes of a certain steepness or on certain types of soils
- Through the building code
- Visual resource zoning or guidelines that limit development in important viewshed areas

Coordinate with local municipalities to determine which regulations apply.

Affected Environment

Describe the geology of the project site. Discuss various types of soil and rock present. Include known areas of erosion and locations of soft and firm soil areas. Provide the depth to bedrock and to groundwater. Describe subsurface water conditions that might affect soil moisture, water supplies, wetlands, water movement, and project construction activities.

Provide information on geological hazards (e.g., regional faulting and potential seismic events, existing or ancient landslides, areas prone to flooding, potential rock fall conditions), topographic setting, unique physical features, and existing sundry sites (e.g., stockpile sites, waste sites).

Data for this section may be obtained from a variety of sources, including the Utah Automated Geographic Reference Center (AGRC), which provides a wide range of Geographic Information System (GIS) support to the State of Utah. See Table 15 below for AGRC contact information and additional sources.

Table 15. Geology, Soils, and Topography Resource Information

Agency	Address	Telephone/Fax/Web Address
US Geological Survey,	2329 W. Orton Circle West Valley City, UT 84119	801-908-5000 801-908-5001 fax
Automated Geographic Reference Center (AGRC)	State Office Building, Room 5130 Salt Lake City, UT 84114	801-538-3665 801-538-3317 fax
Utah Seismic Safety Commission	1110 State Office Building Salt Lake City, UT 84114	http://des.utah.gov/ussc/index.htm
Utah Geological Survey	1594 W. North Temple PO Box 146100 Salt Lake City, UT 84114	801-537-3300 801-537-3400 fax
USDA, Natural Resources Conservation Service	Wallace F. Bennett Federal Building 125 S. State Street, Room 4402 Salt Lake City, UT 84138-1100	801-524-4550 801-524-4403 fax

Generate soils information by using data from NRCS. NRCS has available large and small-scale digital soil databases for detailed soil surveys (SSURGO), general soil maps (STATSGO), major land resource areas (MLRA), and ecological regions (CER). Table 16 below details soil survey data sets organized by State Soils Survey Area ID (STSSAID) for Utah.

Table 16. Soil Survey Data Sets Available in the SSURGO Database

STSSAID	Soil Survey Area Name	Date Published
UT047	Uintah Area, Utah, Parts Of Uintah, Grand, And Daggett Counties	09/04/2002
UT601	Box Elder County, Utah, Western Part	10/27/1998

UT602	Box Elder County, Utah, Eastern Part	03/06/2002
UT603	Cache Valley Area, Parts Of Cache And Box Elder Counties, Utah	06/23/1999
UT604	Rich County, Utah	09/27/2002
UT607	Davis-Weber Area, Utah	10/23/2000
UT608	Fairfield-Nephi Area, Utah, Parts Of Juab, Sanpete, And Utah Counties	07/26/2000
UT609	Morgan Area, Utah, Morgan County And Part Of Weber County	03/28/2001
UT611	Tooele Area, Utah - Tooele County And Parts Of Box Elder, Davis And Juab Counties, Utah A	10/27/1998
UT612	Salt Lake Area, Utah	03/07/2002
UT613	Summit Area, Utah, Parts Of Summit, Salt Lake And Wasatch Counties	05/02/2002
UT616	Carbon Area, Utah, Parts Of Carbon And Emery Counties	03/30/2001
UT618	Millard County, Utah-Eastern Part	09/27/1999
UT618	Millard County, Utah-Eastern Part	1998
UT621	Utah County, Utah - Central Part	05/24/1999
UT622	Heber Valley Area, Utah - Parts Of Wasatch An	07/20/1999
UT624	Grand County, Utah, Central Part	09/10/2002
UT624	Grand County, Utah, Central Part	05/15/2000
UT631	Henry Mountains Area, Utah, Parts Of Garfield, Kane And Wayne Counties	04/22/2002
UT632	Delta Area, Utah - Part Of Millard County	06/28/1999
UT634	Iron-Washington Area, Utah-Parts Of Iron, Kane & Washington Counties	09/29/1999
UT634	Iron-Washington Area, Utah-Parts Of Iron, Kane & Washington Counties	1998
UT636	Panguitch Area, Utah, Parts Of Garfield, Iron, Kane, And Piute Counties	03/01/2001
UT638	San Juan County, Utah, Central Part	02/08/2002
UT640	Beaver-Cove Fort Area, Utah, Parts Of Beaver And Millard Counties	07/27/2000
UT641	Washington County Area, Utah	10/11/2000
UT644	Henrys Fork Area, Utah-Wyoming--Parts Of: Daggett And Summit Counties, Utah And Sweetwater County, Wyoming	07/23/1999
UT652	Dinosaur National Monument, Colorado And Utah	03/01/2002

Note: Metadata available at: http://www.ut.nrcs.usda.gov/technical/soils/soilsruveyinfo.html

Impacts

Describe direct impacts to structure foundations and to natural landforms. Also address impacts to geologic conditions such as cut, fill, and landslide slope stability.

Describe indirect impacts that may create or worsen current erosion or geologic hazards conditions, and consider the potential for settlement.

Coordinate to identify potential avoidance/minimization measures to reduce impacts. Discuss the possibility for both the general public and the workers to come in contact with these potential hazards.

Avoidance, Minimization, and/or Mitigation Measures

Provide a bulleted list of developed mitigation measures. Impacts to geologic and topographic features should be reviewed for possible measures to reduce the impact to structural integrity. Mitigation measures could include the following:

- Developing Best Management Practices (for erosion control, salinity management, and groundwater protection)
- Strengthening existing geological features/structures

Floodplains

Regulatory Setting

Executive Order 11988 (Floodplain Management) directs Federal agencies to take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values served by floodplains. Agencies actions must reflect consideration of alternatives to avoid impacts in floodplains and modify the proposed action to minimize such impacts where impacts are unavoidable. Agencies are required to make a finding that there is no practicable alternative before taking action that would encroach on a base floodplain based on a 100-year flood, according to FHWA's requirements for compliance "Location and Hydraulic Design of Encroachments on Flood Plains"23 CFR Section 650 Sub part A,). A proposed project that includes a significant encroachment cannot be approved unless FHWA finds that the proposed significant encroachment is the only practicable alternative. 23 CFR 650.105(q) defines "significant encroachment" as a highway encroachment, and any direct support of floodplain development that would involve one or more of the following construction or flood related impacts:

- A significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route;
- A significant risk; or
- A significant adverse impact on natural and beneficial floodplain values.

A permit is required for any structure or activity that may adversely affect the flood regime of a stream within the flood zone. Local governments participating in the National Flood Insurance Program (NFIP) are required to review proposed construction projects to determine if they are in identified floodplains. If a project is located in a mapped floodplain, the local government must require that a development permit be obtained prior to construction.

Studies and Coordination

To determine whether or not the project is within a 100-year floodplain, review Federal Emergency Management Agency (FEMA) maps and National Flood Insurance Program (NFIP) maps, available from public libraries, the Utah State Division of Water Resources, city and county flood control managers, or public works departments (Table 17). If you can still not determine whether the project is located within the 100-year floodplain, contact the Utah State coordinator.

Table 17. Floodplain Resources for Utah

Agency	Address	Telephone/Fax/Web Address
Federal Emergency Management Agency, Region VIII	Building 710 PO Box 25267 Denver, CO 80225-0267	303-235-4800 303-235-4976 fax
Utah Division of Emergency Services & Homeland Security, Floodplain Management Program	State Office Building, Room 1110 Salt Lake City, UT 84114	801-538-3750 801-538-3772 fax http://cem.utah.gov/flood/
Utah Division of Water Resources	1594 W. North Temple PO Box 146201 Salt Lake City, UT 84114	801-538-7230 801-538-7279
US Geological Survey, Utah Water Resource District	2329 W. Orton Circle West Valley City, UT 84119-2047	801-908-5000 801-908-5001 fax

Notes: NFIP Regulations can be downloaded from the FEMA website:
http://fema.gov/nfip/laws.htm
Maps and Flood Insurance Study Reports are available from the FEMA Map Service Center at (800) 358-9616

Affected Environment

The 100-year floodplain is defined as "the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year." An encroachment is defined as "an action within the limits of the 100-year floodplain."

Indicate the presence or absence of a 100-year floodplain. If a floodplain exists, describe the existing base relevant to the proposed project. Describe recent flood history, high water mark and the nature of the flooding. Include maps portraying the floodplains in relation to the project area.

If the project is within a 100-year floodplain, further study will be required and the floodplain agency having jurisdiction over the project area must be provided an opportunity to review and comment on the design plans. An evaluation must determine if any of the actions will involve permanently encroaching on a regulatory floodway or if the action will involve any work affecting the base floodplain (100-year) elevations of a watercourse or lake.

Impacts

Discuss any impacts on the floodplain, including designs for stream crossings and any other drainage structure included in the proposed project. Include a determination as to the significance of any the encroachments on the situations listed above in the regulatory setting. If encroachments result in a base floodplain elevation, then a hydraulic computer model will be run to determine the amount of impact. Provide documentation of the direct impacts.

Discuss any indirect impacts such as the potential for interruption of an evacuation route, or interfering with a facility needed for emergency vehicles. Discuss the potential impact for flood-related property loss or hazard to human life, and any adverse impact on natural and beneficial floodplain values. Document the findings resulting from the floodplain assessment of project impacts to the beneficial values of the floodplains.

Avoidance, Minimization, and/or Mitigation Measures

Discuss measures to avoid the floodplain, or in unavoidable, describe mitigation measures to minimize impacts to the floodplain. Potential mitigation measures are listed below:

- Implementing floodplain habitat restoration
- Collecting and treating runoff resulting from an action prior to its discharge into a floodplain
- Establishing a vegetative buffer zone between the site of a proposed action and adjacent floodplains
- Improving habitat values and functions through management.
- Providing additional design features such as steeper side slopes, guardrails, and wing-walls.

Only Practicable Alternative Finding

According to 23 CFR 650, Subpart A, if the proposed project includes a floodplain encroachment having significant impacts, the final EA must include a finding that it is the "only practicable alternative finding". The finding should include the following information in the discussion:

- The reasons why the proposed action must be located in the floodplain;
- The alternatives considered and why they were not practicable; and
- A statement indicating whether the action conforms to applicable State or local floodplain protection standards.

Water Quality

Regulatory Setting, Studies and Coordination

The primary federal law regulating water quality is the Clean Water Act. Section 401 of the Act requires a water quality certification from the State Board or Regional Board when a project: 1) requires a federal license or permit (a Section 404 permit is the most common federal permit for UDOT projects), and 2) will result in a discharge to waters of the United States. .

Determine if there are water resources (e.g., rivers, streams, lakes, reservoirs, impoundments, wetlands, drainage sloughs,) within or immediately adjacent to the project area. If so, consult with Utah Department of Environmental Quality, Division of Water Quality to determine if a water quality certification will be required. For projects involving construction over a navigable waterway—coordination with the Corps is required. Section 404 of the Clean Water Act prohibits the discharge of dredged or fill material into waters of the United States, including wetlands, without a permit from the Corps.

However, the following bulleted list details certain activities that are specifically exempt from Section 404 permit requirements:

- Normal farming, ranching, and forestry activities, such as plowing, minor draining, and harvesting
- Constructing and maintaining stock ponds or irrigation ditches, or maintaining drainage ditches
- Constructing or maintaining farm, forest, or mining roads
- Maintaining or reconstructing structures that are currently serviceable
- Constructing temporary sedimentation basins on uplands
- Activities regulated by an approved best management practices program authorized by Section 208(b)(4) of the CWA.

Section 401 of the CWA gives each state, the authority to grant, deny, or condition certification of Federal permits or licenses (e.g., CWA Section 404 permits issued by the Corps, Federal Energy Regulatory Commission licenses, and CWA Section 402 permits issued by EPA) that may result in a discharge to "waters of the U.S." Such action is taken by the State to ensure compliance with various provisions of the CWA. Violation of water quality standards is often the basis for denials or conditioning through Section 401 certification.

The National Pollutant Discharge Elimination System (NPDES) permit program was established under Section 402 of the CWA. The NPDES prohibits the unauthorized discharge of pollutants from a point source (pipe, ditch, well, etc.) to U.S. waters, including municipal, commercial, and industrial wastewater discharges and discharges from large animal feeding operations. Industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. The EPA has delegated authority to Utah to administer its own water quality regulatory programs, under the UDWQ. Information on permits that may be needed from UDWQ can be found on their

website at http://www.waterquality.utah.gov/PERMITS.HTM. Any discharge of wastewater to surface waters, including storm drains, requires a permit prior to beginning operation. Utah Pollutant Discharge Elimination System (UPDES) Permits are required for all industrial, municipal and federal facilities, except those on Indian lands. UPDES permits and information can be found at http://waterquality.utah.gov/updes/Updes_f.htm.

The term pollutant is defined very broadly by the NPDES regulations and litigation and includes any type of industrial, municipal, and agricultural waste discharged into water. There are three general categories under the NPDES Program: conventional, toxic, and non-conventional. There are five conventional pollutants (mentioned above and defined in Section 304(a)(4) of the CWA). Toxic pollutants, or priority pollutants, are those defined in Section 307(a)(1) of the CWA and include metals and manmade organic compounds. Non-conventional pollutants are those, which do not fall under either of the above categories, and include such parameters as ammonia, nitrogen, phosphorus, chemical oxygen demand (COD), and whole effluent toxicity (WET). NPDES permits are issued only to direct point source discharges. Industrial and commercial indirect dischargers are addressed through the National Pretreatment Program. Direct sources discharge wastewater directly into the receiving water body.

EPA defines the term waters of the United States, to include:

- Navigable waters,
- Tributaries of navigable waters,
- Interstate waters, and
- Intrastate lakes, rivers, and streams which are:
  - used by interstate travelers for recreation and other purposes;
  - sources of fish or shellfish sold in interstate commerce; or
  - utilized for industrial purposes by industries engaged in interstate commerce.

The definition has been interpreted to include virtually all surface waters in the United States, including wetlands and ephemeral streams. As a general matter, groundwater is not considered a water of the United States; therefore, discharges to groundwater are not subject to NPDES requirements. If, on the other hand, there is a discharge to groundwater that has a "hydrological connection" to a nearby surface water, the discharger may be required to apply for an NPDES permit because the discharge is then considered a water of the United States. States may choose to require NPDES permits for discharges to groundwater; jurisdiction over groundwater resources is maintained by each State.

Utah State agencies that are responsible for water quality in Utah include:.

- The Utah Division of Water Quality (Dept. of Environmental Quality) primarily deals with the prevention of water pollution. It has programs to prevent the degradation of the state's rivers, streams, lakes and reservoirs.
- The Utah Division of Water Resources (Dept. of Natural Resources) is involved with the funding of agricultural, municipal water projects and water resource planning for the State.
- The Utah Division of Water Rights (Dept. of Natural Resources) administers a program that grants legal water rights for the use of the State's water. It also

administers rules for the drilling of wells (as does the Division of Drinking Water), licenses well drillers, issues well-drilling permits and conducts a dam safety program.

- The Utah Division of Drinking Water (Dept. of Environmental Quality) oversees activities related to the design and operation of the public drinking water systems.

Early coordination with the Corps is recommended.

Affected Environment

Determine the major water sheds and associated water resources (e.g., rivers, streams, lakes, reservoirs, impoundments, wetlands, drainage sloughs,) within or immediately adjacent to the project area. Provide a description of those water resources and describe the condition of each. The inclusion of water quality data spanning several years is encouraged to reflect trends. Describe watersheds surrounding the area. Through the Watershed Management Program, the UD WQ has developed a useful website that provides detailed information on watersheds throughout the state (Table 18). Information regarding each watershed basin, sub-watershed activities, maps, water quality, photo tours, and Total Maximum Daily Loads (TMDLs) is available on this site.

Determine the water quality of the water resources and the groundwater. USGS has been collecting hydrologic data that relates to the occurrence, quantity, and quality of water resources in Utah since 1889. The agency maintains a network of about 200 gauging stations on rivers, streams, lakes, and reservoirs in Utah that should be used as a source of information. UDWQ website also maintains a list of 303 (d) impaired waters for the state at http://waterquality.utah.gov/.

Identify any area designated as a principal or sole-source aquifer under Section 1414(e) of the Safe Drinking Water Act that may be impacted by the proposed project. EPA in Region VIII has designated two sole source aquifers in Utah: the Castle Valley Aquifer System at Castle Valley and the Glen Canyon Aquifer System at Moab, Utah. EPA has determined these aquifers and their immediately adjacent recharge areas the sole or principal source of drinking water for that region. Aquifer Classification Maps for Utah's ground water are available on line at http://www.waterquality.utah.gov/aquifermap.htm.

Identify all groundwater rights in the project area. Water rights information is available through the Utah Division of Water Rights. All records are available in the Salt Lake City office, or on the Utah Division of Water Right's website: http://nrwrt1.nr.state.ut.us/.

Table 18. Water Quality Contact Information

Agency	Address	Telephone/Fax/Web Address
US Geological Survey, Utah Water Resource District	2329 Orton Circle West Valley City, Utah 84119-2047	801-908-5000 801-908-5001 fax http://ut.water.usgs.gov/
Utah Department of Environmental Quality, Division of Water Quality	PO Box 144870 Salt Lake City, UT 84114	801-538-6146 801-538-6016 fax http://waterquality.utah.gov/
Utah Department of Environmental Quality, Division of Drinking Water	Utah State Office Park, Building #1 1950 W. North Temple P.O. Box 144830	801-536-4200 801-536-4211 fax http://www.drinkingwater.utah.gov/

	Salt Lake City, Utah 84114	
Utah Department of Natural Resources, Division of Water Resources	1594 W. North Temple PO Box 146300 Salt Lake City, UT 84114	801-538-7230 801-538-7279 fax http://www.water.utah.gov/
Utah Department of Natural Resources, Division of Water Rights	1594 W. North Temple, Suite 220 PO Box 146300 Salt Lake City, UT 84114	801-538-7240 http://nrwrt1.nr.state.ut.us/
US Army Corps of Engineers Utah Regulatory Office	533 W. 2600 S., Suite 150 Bountiful, UT 84010	801-295-8380 801-295-8842 fax
St. George Regulatory Office	321 North Mall Drive, Suite L101 St. George, UT 84790	435-986-3979 435-986-3981 fax
Gunnison Basin Colorado Regulatory Office	400 Rood Ave., Rm. 142 Grand Junction, CO 81501-2563	970-243-1199 x11 970-241-2358 fax

Impacts

Identify any locations where roadway runoff or other non-point source pollution may adversely directly impact sensitive water resources such as water supply reservoirs, ground water recharge areas, and high quality streams. The study should identify the potential impacts of each alternative. Discuss additional impacts to both surface and groundwater, and identify any impacts to groundwater rights and their respective wells.

Also discuss indirect impacts such as changes that can affect the quality of surface waters, leaching of materials and chemicals that can impact the quality of groundwater aquifers or spills that can impact both surface and groundwater quality.

If none of the alternatives affect aquifers, the requirements of the Safe Drinking Water Act are satisfied. If a sole source aquifer is identified in the project area, coordinate with the EPA to identify potential impacts. The EPA will furnish information on whether any of the alternatives affect the aquifer. If an alternative is selected which affects the aquifer, a design must be developed to assure, to the satisfaction of the EPA, that it will not contaminate the aquifer. Provide details regarding coordination with the EPA and identify its position on the impacts of the various alternatives. Demonstrate that the EPA's concerns concerning the preferred alternative have been resolved.

Avoidance, Minimization, and/or Mitigation Measures

Provide a bulleted list of mitigation measures to address impacts to water resources. Include results from coordination with the EPA and the Corps. Include possible Best Management Practices (BMPs), which are developed to guide the design and construction of new development or infrastructure improvements to minimize adverse environmental impacts. Mitigation measures for water resources include the following:

- Develop Storm Water Pollution Prevention Plans to minimize non-point source pollution.
- Stabilize roadside ditches and install sediment pits and storm drain catch basins.

- Minimize the development of impervious surfaces.
- Establish minimum setbacks from water for stockpiles and stabilize to prevent erosion
- Excess fill is not to be disposed of in the lake or channel
- Handle fuel oils and other contaminants in designated areas away from the lake (minimum 10 m buffer) so that any spills would be unlikely to reach the water either directly or through the ground.
- Construction equipment must not be cleaned in the lake or channel
- Minimize the duration of soil exposure and complete grading operations soon after the grubbing operation exposes the soil
- Retain as much existing vegetation as possible to minimize erosion
- Divert runoff away from exposed soil
- Keep runoff velocities low

Wild and Scenic Rivers

Regulatory Setting, Studies and Coordination

The National Wild and Scenic Rivers System was created by the Wild and Scenic Rivers Act of 1968. The act is the primary federal regulation governing the treatment of certain selected rivers that possess remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. There are four primary federal agencies charged with protecting and managing Wild and Scenic Rivers and the nation's cultural, recreational and natural resources: Bureau of Land Management (BLM), National Park Service (NPS), US Fish and Wildlife Service (USFWS), and US Forest Service (USFS). NPS maintains a compiled list for all four agencies. Although there are no rivers in Utah that have been designated by Congress into the National Wild and Scenic Rivers System to date, if a river possible for designation is present in or adjacent to the proposed project, coordinate with the relevant local field office. Section 5(d)(1) of the Act directs all federal agencies to consider the potential for national wild, scenic and recreational river areas in all planning for the use and development of water and related land resources. Stream segments that are deemed "suitable" by an agency, but not yet approved by Congress, must be protected to maintain their suitability status. Sources of information on wild and scenic rivers are listed below in Table 19.

FHWA provides several guidance documents for projects involving wild and scenic rivers:

- Section 4(f) Involvement- Wild and Scenic Rivers System, (May 26, 1981) (http://environment.fhwa.dot.gov/guidebook/vol1/doc15b.pdf)
- Policy Guidance for Wild and Scenic Rivers, (October 3, 1980) (http://environment.fhwa.dot.gov/guidebook/vol1/doc15c.pdf)
- Section 4(f) Involvement- Wildlife and Scenic River Corridors, (June 6, 1978) (http://environment.fhwa.dot.gov/guidebook/vol1/doc15d.pdf)

Table 19. Wild and Scenic River Information

Agency	Address	Telephone/Fax/Web Address
Bureau of Land Management, Utah State Office	440 W. 200 S., Suite 500 PO Box 45155 Salt Lake City, UT 84145	801-539-4001 801-539-4013 fax http://www.blm.gov/nlcs/rivers.htm
Department of the Interior, National Park Service	1849 C Street, NW Washington DC 20240	202-208-6843 http://www.nps.gov/rivers/wildriverslist.html
US Fish and Wildlife Service, Utah Ecological Services Field Office	2369 W. Orton Circle, Suite 50 West Valley City, UT 84119	801-975-3330 801-975-3331 fax
US Forest Service, Intermountain Region	324 25th Street Ogden, UT 84401	801-625-5306

Affected Environment

Describe any "suitable" river segments that occur in or adjacent to the project area. It is important to identify these segments because the tentative classification ensures that river values and characteristics are fully considered in any action pending the evaluation process until they are either dropped from further study during suitability or designated by Congress.

Impacts

Describe possible direct impacts from the proposed project on Wild and Scenic Rivers regulated by any four of the agencies list above, or possible impacts to suitable river segments identified above.

Indirect impacts include effects to all natural, cultural and recreational values of the identified river. Each river designation is different and each management plan is unique. Therefore, impacts must be assessed in accordance with each individual plan. Development to a river that is not damaging to the outstanding resources, or curtailing its free flow, is usually allowed.

Avoidance, Minimization, and/or Mitigation Measures

If a Wild and Scenic River, or one suitable for designation, is present in or adjacent to the proposed project site, coordinate with the responsible agency to ensure adequate protection. Document in a bulleted list, all mitigation measures developed to ensure protection of the river. Mitigation measures may include the following:

- Revegetating and stabilizing the banks to help protect against sedimentation.
- Place limestone within contaminated rivers and streams to help clear the water of impurities, in effect, "cleaning" the mountain streams.

- Where construction has come close to a stream, rare vegetation can be replaced during careful reclamation of the area.
- Fences may be erected along stream banks to prevent animals from destroying unstable streambeds.
- Design and install specialized culverts with open bottoms to protect delicate streambeds.

Wetlands

Regulatory Setting, Studies and Coordination

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 U.S.C. 1344) is the primary law regulating wetlands and waters of the United States. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the Clean Water Act, a three-parameter approach is used that includes the presence of hydrophilic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act. Section 404 of the Clean Water Act establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. Section 404 permit program is run by the Corps with oversight by the Environmental Protection Agency (EPA).

The Executive Order for the Protection of Wetlands (E.O. 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as the Federal Highway Administration, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

In addition to the Corps, the Utah State Division of Water Quality and the Utah State Water Quality Board regulate wetlands as waters of the state under Utah's water quality standards. Additionally, the Utah Division of Wildlife Resources (UDWR) hosts a wetlands program and has two contacts identified for each region (Table 20). To comply with existing laws and regulations, wetlands that may be affected either in or adjacent to the project site, must be addressed.

Table 20. Contact Information for Regional Wetland Issues

Agency	Address/Region	Telephone/Fax
Division of Water Quality/State Water Quality Board	PO Box 144870 Salt Lake City, UT 84114	801-538-6146 801-538-6016 http://waterquality.utah.gov/

Utah 404 Permit Review, US Environmental Protection Agency, Region 8, Wetlands Program	Mail Code: 8-EPR-EP 999-18th Street, Suite 500 Denver, CO 80202-2405	303-312-6794 EPA Wetlands Information Helpline: 800-832-7828 http://www.epa.gov/Region8/water/wetlands/wetlands.html
US Army Corps of Engineers Utah Regulatory Office	533 W. 2600 S., Suite 150 Bountiful, UT 84010	801-295-8380 801-295-8842 fax
St. George Regulatory Office	321 North Mall Drive, Suite L101 St. George, UT 84790	435-986-3979 435-986-3981 fax
Gunnison Basin Colorado Regulatory Office	400 Rood Ave., Rm. 142 Grand Junction, CO 81501-2563	970-243-1199 x11 970-241-2358 fax

UDWR Regional Wetland Issues contacts	
Northern Region	801-476-2775 801-476-2776
Central Region	801-491-5654 801-538-4855
Southern Region	435-865-6111 435-865-6112
Northeastern Region	435-781-9453 435-781-9453
Southeastern Region	435-636-0279 435-636-0274

Affected Environment

Identify wetlands in or adjacent to the proposed project that may be affected. USGS identified the Great Salt Lake as a major wetland area in Utah, and numerous other sites exist throughout the state (e.g., Bear River Migratory Bird Refuge, Farmington Bay Waterfowl Management Area, Ouray National Wildlife Refuge, Fish Springs National Wildlife Refuge, and Matheson Wetland Preserve).

If wetlands may be affected by the proposed activity, the first step is to determine the boundaries of the jurisdictional waters on the project site. The Draft EA should contain a copy of an approved jurisdictional delineation. In accordance with the "no net loss" of wetlands standard, the Corps requires a one-for-one replacement for impacted acreage for each project. The Final EA should include a conceptual wetlands mitigation plan.

Provide a current status map by contacting the National Wetlands Inventory (NWI) Regional Wetlands Coordinator (Table 21). The NWI provides information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats and other wildlife habitats. NWI maps can be purchased through various Cooperator-Run Distribution Centers. Each Center establishes its own pricing structure, product types and ordering procedures.

List the known wetland functions in the project vicinity. These functions could include providing fish, wildlife and plant habitats and sources of substantial biodiversity,

supporting certain birds and mammals as they rely on wetlands for food, water, and shelter, especially while migrating and breeding, providing recreational and education opportunities, or reducing potential for flood damage.

Table 21. Utah Wetlands Contacts/Resources

Agency	Address	Telephone/Fax/Web Address
Regional Wetlands Coordinator, US Fish and Wildlife Service, National Wetland Inventory, Mountain Prairie Region (6)	PO Box 25486 Denver, CO 80225	303-236-4263 303-236-4631 fax http://www.nwi.fws.gov/
Northern Plains Biostress Lab, Department of Wildlife & Fisheries Sciences, South Dakota State University	PO Box 2140-B Brookings, SD 57007	605-688-6121 605-688-4515 fax

Identify any preexisting wetlands concerns in the area and provide detailed information on agency coordination that has occurred as a result of the proposed project.

Impacts

Once each wetland's classification, characteristics, quality, and functions are identified, complete an assessment on both direct and indirect impacts in a table format. Provide a map with an overlay of the wetland delineations and the project area to display how the project would affect the wetlands. Describe alterations to natural drainage patterns, wetland draining due to channel straightening, and/or wetland filling or displacement. Address any altered wetland functions identified under the Affected Environment (e.g., adverse impacts to habitat functions) and provide details on water quality impacts including sediment loads and deposition, toxic runoff, and water level increases or decreases.

Avoidance, Minimization, and/or Mitigation Measures

Regulatory agencies prefer that the wetlands are left undisturbed. Where avoidance is not practical and wetlands are adversely affected, the Corps typically requires mitigation.

The proper sequence of mitigation priority in project design is as follows:

- First, avoid adverse effects on wetlands
- Second, if avoiding adverse effects is not practicable, minimize effects on wetlands to the extent practicable
- Third, compensate for those impacts on wetlands that are unavoidable

Develop compensation measures for the impacts by restoring, enhancing, and/or creating wetlands.

Possible mitigation measures include the following:

- Replace the lost wetlands on the same site

- Mitigate the impacted wetlands off-site by purchasing another piece of property and construct compensatory wetlands;

Participate in mitigation banking, which offers a new alternative that simplifies the process for the development community. Preserves, called mitigation banks, are large areas of constructed, restored, or preserved wetlands set aside for the express purpose of providing compensatory mitigation for impacts to habitat. A bank is authorized to sell the habitat values created on the preserve. These values, known as credits, are sold to landowners who need to substitute wetlands for those lost to development where avoidance or on-site mitigation is not feasible.

Only Practicable Alternative Finding

As stated above E.O. 11990 directs federal agencies to avoid to the extent possible the long and short term adverse impacts associated with the modifications or destruction of wetlands and to avoid direct and indirect support of construction in wetlands unless there is no practical alternative to such construction and the proposed project includes all practical measures to minimize harm to the wetlands. If the proposed project impacts wetlands, for the "final" EA why there is not a practicable alternative to the proposed action must be explained.

Water Bodies and Wildlife

Regulatory Setting, Studies and Coordination

The regulatory setting for this section is the same as that provided in the Threatened and Endangered (T&E) Species section that follows. This includes the federal regulations of the federal Endangered Species Act (ESA) (16 USC 1531 et seq.), Federal Candidate Species, Migratory Bird Treaty Act (MBTA) (16 USC 703–711), and Fish and Wildlife Conservation Act (FWCA) (16 USC 2901–2911). The U.S. Fish and Wildlife Service (USFWS) is one of the federal agencies that administers the ESA and has primary responsibility for terrestrial and freshwater species.

State of Utah regulations include the Utah wildlife species of concern (Utah Administrative Rule R657-48) and State of Utah conservation agreement species. The UDWR is the state agency responsible for monitoring Utah Wildlife Species of Concern (WSC) and the State of Utah conservation agreement species.

Conservation agreement species are those wildlife species and subspecies that meet the Utah Department of Natural Resources (UDNR) criteria of endangered, threatened, or special concern. This category does not include species and subspecies that are currently listed under the federal ESA as threatened or endangered. Conservation agreement species are currently receiving sufficient special management under a conservation agreement developed and/or implemented by the state to preclude their federal listing. A list of these species can be found at UDWR's website: http://www.wildlife.utah.gov/habitat/nconserv.html.

Utah wildlife species of concern (WSC), which are listed on Utah's Sensitive Species List are those species for which there is credible scientific evidence to substantiate a threat to continued population viability in the state of Utah. WSC designations are

intended to promote conservation actions that will ultimately prevent the species from being listed as threatened or endangered under the ESA. UDWR is the state agency responsible for monitoring WSC. Identification of WSC in a project study area does not require consultation with UDWR. However, it is considered standard procedure to list all WSC in an EA and to take into consideration conservation management guidelines that relate to each species. Consult the UDWR website for a current list of WSC.

UDWR's website provides a WSC list by county, along with the federal T&E species by county at http://dwrcdc.nr.utah.gov/ucdc/.

Detailed information on the federal regulations are found in the Threatened and Endangered Species section.

Cross-reference the regulatory section of the Threatened and Endangered Species section, if relevant.

FHWA provides non-regulatory guidance for matters of surface and ground water resources, fish and wildlife, and soil conservation in the planning and development of transportation projects in NS 23 CFR 650B http://www.fhwa.dot.gov/legsregs/directives/fapg/0650bsu1.htm.

Affected Environment

Identify the location of water bodies in and adjacent to the proposed project. Provide a map delineating the watersheds covering the project area. Identify if the stream or water body is used for recreation, water supply or other purposes. Generally describe upland and wetland wildlife habitat and corridors present in these areas, including both fish and wildlife, and identify flora and fauna that may support function of wetlands. Also describe wildlife species that use these habitats. Include any designations for wildlife or vegetation, under the federal or state regulations. Include a description of consultation with the UDWR regarding WSC or conservation agreement species. Cross-reference the Threatened and Endangered Species section, if relevant.

Impacts

Describe the extent of water body modifications (e.g., impoundment, relocation, channel deepening, filling, etc.) and any direct loss or modification to or degradation of wildlife habitat. Address both direct (e.g., removal of forage) and indirect (e.g., alteration of stream channel and downstream sedimentation and potential flow changes) impacts to wildlife, and to the flora and fauna habitat relative to wetlands. Include a description of any impacts on migratory species. Provide details about impacts to wildlife migration corridors. Cross-reference the Threatened and Endangered Species section below, if relevant.

Avoidance, Minimization, and/or Mitigation Measures

Explain the efforts to incorporate design features into the proposed project to avoid/minimize impacts to water bodies and wildlife. Include the results of coordination with appropriate USFWS, UDWR and local agencies. Present mitigation measures if

required, and cross-reference them with the Water Quality and Wetlands sections to ensure consistency.

Threatened and Endangered Species

Regulatory Setting, Studies and Coordination

Section 7 of the Federal Endangered Species Act (ESA) (16 USC 1531 et seq.) requires FHWA to consult with the USFWS and the National Marine Fisheries Service (NOAA Fisheries) to ensure that they are not undertaking, funding, permitting or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. NOAA Fisheries would require consultation for projects involving brine shrimp in Utah and does not apply otherwise. Threatened and Endangered (T & E) species are species of plants and animals that are formally listed as "threatened" or "endangered" under the ESA. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species.

In most cases, where federally listed species are involved, the project biologist will complete a Biological Assessment (BA) as part of an informal consultation with the USFWS. By regulation, a biological assessment is prepared for "major construction activities" considered to be Federal actions significantly affecting the quality of the human environment as referred to in NEPA (42 U.S.C. 4321 et seq.). A major construction activity is a construction project or other undertaking having similar physical impacts, which qualify under NEPA as a major federal action. Major construction activities include dams, buildings, pipelines, roads, water resource developments, channel improvements, and other such projects that modify the physical environment and that constitute major Federal actions. The BA is written under the direction of the federal agency having jurisdiction over the species, usually the USFWS. The BA should provide all the necessary information on federal endangered species for the preparation of the EA, including affected environment, environmental consequences, and avoidance, minimization and/or mitigation measures. The author then summarizes the information and incorporates the BA by reference as needed. For more detailed information regarding the informal consultation process and the BA visit the USFWS Endangered Species Program website: http://endangered.fws.gov/consultations/s7hndbk/ch1-3.pdf.

A formal consultation under Section 7 of the ESA determines whether a proposed agency action(s) is likely to jeopardize the continued existence of a listed species (jeopardy) or destroy or adversely modify critical habitat (adverse modification). As part of a formal consultation under Section 7 of the ESA, a Biological Opinion (BO) must result in either a jeopardy or no jeopardy to a listed species, or adverse or no adverse modification of critical habitat finding. A formal biological opinion consists of a description of the proposed action, status of the species/critical habitat, the environmental baseline, effects of the action, cumulative effects, the USFWS's conclusion of jeopardy/no jeopardy and/or adverse modification/no adverse modification, and reasonable and prudent alternatives, as appropriate. For more detailed information regarding the formal consultation process and BOs, visit the USFWS Endangered Species Program website: http://endangered.fws.gov/consultations/s7hndbk/ch4.pdf.

The ESA provides certain protections for species that are listed or proposed for listing as threatened or endangered under the ESA. Under Section 7 of the ESA, federal agencies are required to ensure that their actions do not jeopardize the continued existence of species listed as endangered or threatened, or result in destruction or adverse modification of designated critical habitats used by those species. Section 9 of the ESA makes it unlawful for a person to take a listed species, where take is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct (16 USC 1532). Further, the term harass is defined as an intentional or negligent act that creates the likelihood of injuring wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns such as breeding, feeding, or sheltering (50 CFR 17.3). Harm is an act that either kills or injures a listed species. Such an act may include habitat modification or degradation that actually kills or injures a listed species by significantly impairing essential behavior patterns such as breeding, spawning, rearing, migrating, feeding, or sheltering (50 CFR 217.12). Habitat degradation can cause take through either the harm or harass pathways outlined above. Acceptable levels of incidental take may be allowed under the authorities of Sections 4(d), 7(b), and 10(a) of the ESA.

USFWS is one of the federal agencies that administers the ESA and has primary responsibility for terrestrial and freshwater species.

The ESA also designates species that are candidates for listing as threatened or endangered. Candidate species are species under consideration for proposal for listing as threatened or endangered. State and federal agencies typically carry out conservation actions for candidate species to prevent their further decline and possibly eliminate the need to list them in the future.

The Migratory Bird Treaty Act (MBTA) (16 USC 703–711) prohibits the take of any migratory bird, or any part, nest, or egg of any such bird, where take is defined as the attempt to "pursue, hunt, shoot, capture, collect, or kill." This act applies to all persons and organizations in the United States, including federal and state agencies. The MBTA is administered by USFWS, with regulation of listed migratory birds delegated to the agency staff handling Section 7 of the ESA, and regulation of unlisted migratory birds delegated to USFWS's Migratory Bird Division.

The 1988 amendment to the Fish and Wildlife Conservation Act (FWCA) (16 USC 2901–2911) mandates that USFWS identify migratory and non-migratory birds of the United States and its territories that, without additional conservation actions, are likely to become candidates for listing under the ESA. These species are designated as Birds of Conservation Concern (BCC) and include ESA candidate, proposed endangered or threatened, and recently delisted species.

For detailed guidance on interrelationship of NEPA environmental analysis and ESA, please refer to the following link on the FHWA website:
http://www.fhwa.dot.gov/environment/esaguide.htm

Affected Environment

This section should include a summary of the federal consultation process and the status of consultation to date. Carefully document correspondence with the resource agencies and include the correspondence in an appendix. T & E lists are updated annually so make sure the most recent version is being used. The correspondence must include a

copy of a recent (not older than 2 years) species list(s) requested for the proposed project. The T & E section should be focused on only Federal ESA issues. A more general discussion of special-status species should be included in other sections of the EA as appropriate.

The USFWS is the primary source of information on T & E species within the State of Utah. Utah is located within Region 6 of the USFWS (Table 22). Coordination occurs with the local office and any permits are issued by the Denver office.

Table 22. USFWS Contact List

Agency	Address	Telephone/Fax/Web Address
US Fish and Wildlife Service, Endangered Species Permit Office, Mountain-Prairie Region (6)	Denver Federal Center PO Box 25486 Denver, CO 80225-0489	303-236-7400 303-236-0027 fax http://mountain-prairie.fws.gov/endspp/permitsR6ES@fws.gov
US Fish and Wildlife Service Utah Ecological Services Field Office	2369 W. Orton Circle, Suite 50 West Valley City, UT 84119	801-975-3330 801-975-3331 fax
Utah Fish and Wildlife Management Assistance Office	1380 S. 2350 W. Vernal, UT 84078	435-789-0351 435-789-4805 fax utahfishandwildlife@fws.gov

Impacts

Obtain the biological documentation (biological review, evaluation, or assessment) and any additional coordination or consultation materials prepared during the analysis of impacts to threatened and endangered species. Review the documents for effect determinations to threatened and endangered species. List any impacts to all listed plant and wildlife species analyzed in the biological documentation. Detail the results and determinations made within the biological document. State if a "no effect" or "may effect" determination was made for any federally listed species.

Avoidance, Minimization, and/or Mitigation Measures

Detail mitigation measures or special conditions agreed to as part of informal or formal consultation with the USFWS. These mitigation measures should be presented in bullet format.

Invasive Species

Regulatory Setting, Studies and Coordination

On February 3, 1999, President Clinton signed Executive Order 13112, the foundation of federal action against invasive species. It established the National Invasive Species Council (NISC) and required NISC to issue biennial national management plans for invasive species, and instructed federal agencies to identify their own actions affecting the status of invasive species and to not authorize, fund, or carry out actions likely to

promote or introduce such species in the United States or elsewhere. See the EA Template for example text for the Regulatory Setting section

Local governments in Utah are also responsible for their own invasive species surveys and treatments for their projects, as set forth in the Utah Noxious Weed Act, Title 04 Chapter 17-1 of the Utah Code and Constitution. In administering the Utah Noxious Weed Control Act, the State Weed Specialist coordinates and monitors weed control programs throughout the state (Table 23).

County commissioners may declare a particular weed a county noxious weed (Table 24b). Further coordination with local county government officials is recommended to ensure all county listed noxious weeds have been appropriately addressed.

Table 23. Noxious Weed Contact Information

Agency	Address	Telephone/Fax/Web Address
Utah Department of Agriculture and Food, Noxious Weed Program	Mailing Address: PO Box 146500 Salt Lake City, UT 84114 Physical Address: 350 N. Redwood Road Salt Lake City, UT 84116	801-538-7100 801-538-7126 fax Noxious Weed Program: 801-538-7183 http://ag.utah.gov/plantind/noxiousweeds_utah.html

Affected Environment

Describe in a tabular format, existing invasive species (including wildlife) within the project area.

Research the state list of invasive species from the website for State and Federal Noxious Weeds, http://plants.usda.gov/. Use the link Invasive and Noxious. Then use the link for State Noxious Weed Reports and click on the State of Utah. This can also be found at (http://ag.utah.gov/plantind/nox_utah.html) or in Table 24a.

Research county declared invasive weeds by checking the state website at (http://ag.utah.gov/plantind/nox_county.pdf). Further coordination with local county government officials is recommended to ensure all county listed noxious weeds have been appropriately addressed.

Table 24a. Utah State Noxious Weeds List

Utah Noxious Weed List			
Bermudagrass** (cynodon dactylon)	Hoary cress (cardaria drabe)	Perennial pepperweed (lepidium latifolium)	Scotch thistle (onopordum acanthium)
Canada thistle (cirsium arvense)	Johnsongrass (sorghum halepense)	Perennial sorghum (sorghum halepense L & sorghum almum)	Spotted knapweed (centaurea maculosa)
Diffuse knapweed (centaurea diffusa)	Leafy spurge (euphorbia esula)	Purple loosestrife (lythrum salicaria L.)	Squarrose knapweed (centaurea squarrosa)
Dyers woad (isatis tinctoria L)	Medusahead (taeniatherum caput-medusae)	Quackgrass (agropyron repens)	Yellow starthistle (centaurea solstitialis)
Field bindweed (Wild Morning Glory) (convolvulus arvensis)	Musk thistle (carduus mutans)	Russian knapweed (centaurea repens)	

** Bermudagrass shall not be a noxious weed in Washington County and shall not be subject to provisions of the Utah Noxious Weed Act within the boundaries of the county.

Notes: http://ag.utah.gov/plantind/nox_utah.html

Table 24b. County Noxious Weeds 2003

County	Weeds	County	Weeds
Beaver	Bull Thistle	Rich	Black Henbane, Dalmation toadflax, Poison Hemlock
Box Elder	St. Johnswort	San Juan	Silverleaf Nightshade, Buffalobur, Whorled Milkweed, Jointed goatgrass, Camel thorn
Cache	Goatsrue, Poison Hemlock, Puncture Vine	Sanpete	Houndstongue, Black henbane, Velvet leaf
Carbon	Russian Olive	Sevier	Russian olive
Davis	Poison Hemlock, Yellow Nutsedge, Buffalobur	Tooele	Yellow toadflax, Houndstongue, Dalmation toadflax, Jointed goatgrass
Duchesne	Russian Olive	Uintah	Russian Olive, Salt Cedar
Iron	Western Whorled Milkweed	Washington	Poison Milkweed, Silverleaf Nightshade
Juab	Blue Flowering Lettuce	Wasatch	Yellow toadflax, Dalmation toadflax, Houndstongue
Millard	Buffalobur	Wayne	Russian olive
Morgan	Puncturevine, Burdock	Weber	Puncturevine

Aquatic Nuisance Species are also a concern in Utah and pose a major threat to Utah water resources. These species impact recreation, power and water operations, disrupt the natural ecosystem balance, displace native species, and alter native species' food webs. For information related to prevention regulations, control methods or permits for ANS, contact the Division of Wildlife Resources. The US Fish and Wildlife Service should also be used as a resource to evaluate invasive wildlife species. Non-indigenous coordinators are appointed to each region; Utah is part of Region 6 (Table 25).

Table 25. Contacts for Non-indigenous Species Coordinators

Agency	Address	Telephone/Fax/Web Address
Utah Division of Wildlife Resources	1594 W. North Temple Salt Lake City, UT 84114	801-538-4700 801-538-4745 fax
Non-indigenous Species Coordinator, Kansas State Office, Region 6, US Fish and Wildlife Service	315 Houston Street, Suite E Manhattan, KS 66502	785-539-3474, X107 785-539-8567 fax
Alternate Regional Coordinator, Bozeman Fish Technology Center	4050 Bridger Canyon Road Bozeman, MT 59715	406-587-9265, X122 406-586-5942 fax

Impacts

Identify direct and indirect adverse impacts likely to occur from invasive species. Direct impacts from invasive species include elimination of native and endemic species, which in turn, may indirectly affect community structure, ecosystem processes, and degradation of natural habitat.

Avoidance, Minimization, and/or Mitigation Measures

List mitigation measures in bullet format. Mitigation measures include:

- Inspection and cleaning of construction equipment
- Revegetation of project area with weed free native plant species

Historic and Archaeological Resources

Regulatory Setting, Studies and Coordination

The National Historic Preservation Act, as amended, (NHPA) sets forth national policy and procedures regarding "historic properties"—that is, regions, sites, buildings, structures and objects included in or eligible for the National Register of Historic Places (NRHP). Section 106 of NHPA requires federal agencies to consider the effects of their undertakings on such properties, following regulations issued by the Advisory Council on Historic Preservation (ACHP) (36 CFR 800).

Criteria for evaluating the significance of resources for listing on the NRHP are outlined in 36 CFR 800.10, "National Register Criteria," and in handbooks that describe the NRHP evaluation process. Four criteria are used to evaluate the significance of properties—Criterion A through Criterion D. Under all the criteria, the quality of significance is considered present in sites that possess integrity of location, design, setting, materials, workmanship, feeling, and association. However, quality of significance also serves to differentiate the criteria, as shown below.

- Criterion A: The quality of significance is present in sites that are associated with events that have made a significant contribution to the broad patterns of our history.
- Criterion B: The quality of significance is present in sites that are associated with the lives of persons significant in our past.
- Criterion C: The quality of significance is present in sites that embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.
- Criterion D: The quality of significance is present in sites that have yielded, or may be likely to yield, information important in prehistory or history.

All historic and archaeological resources identified should be evaluated using these criteria for eligibility for listing on the NRHP.

The information and level of effort needed to identify and evaluate historic and archaeological resources will vary for each project as determined by FHWA after considering existing information, the views of the Utah State Historic Preservation Office (SHPO) and the Secretary of Interior's "Standards and Guidelines for Archaeology and Historic Preservation".

It should be noted that not all information about cultural resources can be fully disclosed to the public. If a resource is important because of its potential to yield information about history or prehistory, its location cannot be disclosed by law. This is to protect the site from looters. The locations can be disclosed to certified archaeologists and project team members only.

A memorandum of understanding (MOU) between UDOT and the Utah Geological Survey (UGS) pursuant to U.C.A. 63-73-19 sets forth policy regarding paleontological resources in the State of Utah. If it is determined that the proposed action will have no effect on paleontological resources then no further action is required. If there may be an effect on paleontological resources then documentation and surveys may be required.

According to the MOU, eleven undertakings have been determined by UDOT and the UGS to have no effect on paleontological resources. In which case, no further action must be taken regarding these undertakings. If a proposed action is not one of the eleven undertakings, UDOT or the consultant must submit a letter of request to the Office of the State Paleontologist. Included in the letter is a description of the proposed project and the area of potential effects (APE), a copy of the 7.5' U.S.G.S. (1:24,000 topographic) map showing the project location, and a request for a literature search for paleontological specimens or sites. The UGS will respond within two weeks after receiving the request, with one of the following:

- There are no potential fossil bearing formations in the project APE; or

- Fossil bearing formations are present in the APE, but no field survey is required.
- Fossil bearing formations are present in the APE and a survey is required

The first two bulleted responses do not require an individual review by UGS. If it is determined that fossil bearing formations are present in the APE, an individual review by UGS under U.C.A 63-73-19 is required. Include a copy of the letter requesting the literature search and UGS reply in Chapter 6.

UDOT guidance on conducting historic and archaeological resource surveys and information can be found on their website at http://www.udot.utah.gov/download.php/tid=288/GuideArcheologicalSurveyTest.pdf.

FHWA guidance on historic and archaeological resources can be found on their website at http://environment.fhwa.dot.gov/guidebook/chapters/v2ch10.htm.

Historic properties and archaeological resources included on or eligible for listing on the NRHP should also be included in the Section 4(f) evaluation.

Affected Environment

Briefly list cultural resource studies completed for the project along with completion dates—e.g., Cultural Resource Inventory, Finding of Effect.

Briefly discuss the methodology used to support studies (e.g., record search, field surveys) and describe the APE.

Using the cultural resource technical studies, identify any cultural resources within the APE. If there are none, there's no need to write a full cultural resources section. In Section 106 language, if no historic properties are present, there is a finding of "no historic properties affected."

Discuss the significance of each resource within the APE—i.e., whether it is on or eligible for listing on the HRHP. Note: a cultural resource determined eligible for listing on the NRHP has the same status under the law as a resource that is listed.

Determinations of eligibility are made by a consensus determination between FHWA and the SHPO. Effects determinations are made by FHWA in consultation with the SHPO, the ACHP (if participating), and any other consulting parties. UDOT may submit proposed eligibility and effects determinations, but the final decisions ultimately rest with FHWA.

For undertakings on tribal lands, the decisions are made in consultation with the Tribal Historic Preservation Officer (THPO) providing the THPO has assumed the duties of the SHPO. If a tribe has not done so, their THPO would still be consulted in addition to the SHPO. Be sure to involve Native American representatives early in the process.

If the proposed action is one of the eleven undertakings listed in the MOU with UGS, include a statement saying such and take no further action. If paleontological resources are present in the APE and/or may be affected by the proposed action, discuss the significance of the resource. Briefly list all actions taken regarding paleontological resources including all communication with UGS and the Office of the State Paleontologist, inventories or studies undertaken and all findings.

A list of qualified people and organizations approved to perform the required archaeology in Utah may be obtained by contacting the SHPO office (see Table 26 below).

Table 26. Historic and Archaeological Resources/Information

Agency	Address	Telephone/Fax/Web Address
Utah State Historical Society/Division of State History	300 Rio Grande St. Salt Lake City, UT 84101	801-533-3552 801-533-3503 fax http://history.utah.gov/
Department of Community Culture	324 S. State Street, Suite 500 Salt Lake City, UT 84111	801-538-8700 801-538-8888 fax
Utah State Archives and Records Service	346 S. Rio Grande St. Salt Lake City, UT 84101	801-531-3848 801-531-3854 archivesresearch@utah.gov
Utah State Library Division	250 N. 1950 W., Suite A Salt Lake City, UT 84116	801-715-6790 801-715-6767 fax http://library.utah.gov/
National Park Service, National Register of Historic Places	1201 Eye St., NW 8th Floor (MS 2280) Washington, DC 20005	202-354-2213 http://www.nr.nps.gov/
Advisory Council on Historic Preservation, National Register Evaluation Criteria	1100 Pennsylvania Avenue NW, Suite 809 Old Post Office Building Washington, DC 20004	202-606-8503 http://www.achp.gov/nrcriteria.html
Utah Geological Survey	1594 W. North Temple P.O. Box 146100 Salt Lake City, UT 84114-6100	801-537-3300 801-537-3400 fax http://geology.utah.gov/index.htm
Utah Geological Survey, Southern Utah Regional Office	88 E. Fiddler Canyon Rd., Suite C Cedar City, UT 84720	435-865-9034 435-865-9037 fax

Notes: For a listing of heritage organizations that are partners with the Division of State History/Utah State Historical Society including: historical, preservation, and archaeological groups; museums and libraries; governmental entities and associations; and more, visit State of Utah's website at: http://history.utah.gov/contactabout/partners.html
Section 106 Regulations User's Guide: http://www.achp.gov/usersguide.html

Impacts

Using information taken from the cultural resources technical report(s), Cultural Resource Inventory, Finding of Effect, etc., discuss the potential direct impact(s) of each alternative on the cultural resources identified. Direct impacts to cultural resources are typically associated with ground disturbance from construction activities.

Also provide details regarding possible indirect impacts to each cultural resource identified. Overall increased activity brought by the construction or other changes that may provide additional exposure to a cultural resource are considered indirect, in addition to changes to the visual setting that might affect the cultural landscape.

For resources on or eligible for the NRHP, discuss whether the project would alter the characteristics that make the resource eligible and specifically state for each resource the

appropriate Section 106 determination of effect: adverse effect, no adverse effect on historic properties, or adverse effect on historic properties.

Include a description of any paleontological inventories if conducted, and a discussion of the review conducted by UGS and subsequent findings or actions as a result of the review.

Discuss consultation efforts with SHPO, and if applicable, the ACHP and any other consulting parties (e.g., Native American tribes). Also, discuss the status of SHPO concurrence. Include concurrence letters either in a separate appendix or in the Comments and Coordination section of the document.

Avoidance, Minimization, and/or Mitigation Measures

Discuss proposed avoidance, minimization and/or mitigation measures for each historic, archaeological and paleontological resource.

If artifacts could potentially be unearthed during construction, consider including the text from UDOT's Standard Specification Section 01355, Part 1.10, Discovery of Historical, Archaeological or Paleontological Objects, as provided in the template.

If the project would result in a finding of adverse effect, then a Memorandum of Agreement (MOA) will be needed before circulation of the final environmental document. The MOA discusses the roles and responsibilities of the FHWA, UDOT, consulting parties, SHPO and, if participating, ACHP with respect to the impacts and avoidance, minimization and/or mitigation measures. The MOA must be included as an appendix or in the Comment and Coordination section of the environmental document. For the Final EA, the SHPO or THPO concurrence letter or final executed MOA must be included in the Comments and Coordination section of the document.

The MOA process is shown in a flow chart at ACHP's website: http://www.achp.gov/regsflow.html.

The ACHP's main website is located at http://www.achp.gov/.

Hazardous Waste

Regulatory Setting

Hazardous waste sites are regulated under the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

In accordance with Utah Code (Title 19 Chapter 06 -- Hazardous Substances) guidelines developed for siting hazardous waste treatment, storage, and disposal facilities should address the following considerations:

- The zoning classification of the site proposed and its proximity to present or projected land use dedicated to industrial development;
- The existing land uses and the density of population in areas neighboring the proposed site;

- The density of population in areas adjacent to probable hazardous waste delivery routes;
- The risk and impact of accidents which might occur during the transportation of hazardous wastes to the site;
- The determination of areas that are dedicated to an incompatible public use or are unsuitable for other reasons for the location of hazardous wastes;
- The geology of the proposed site with special attention to the presence of fault zones and the risk of contamination to ground and surface waters through leaching and runoff;
- The risk to life and property from fires or explosions that might occur if improper storage and disposal methods are used;
- The economic and environmental impact of the proposed facility site location upon local governmental units adjacent to, or within which, the facility is proposed for location;
- Closure and post-closure monitoring and maintenance requirements; and
- Other criteria required for the siting of hazardous wastes under state or federal law.

Studies and Coordination

During early planning the location of permitted and non-regulated hazardous waste sites should be identified. Review local records of prior land uses and local and State-maintained databases of hazardous materials sites and underground tanks. Note existing land uses (e.g., gas stations, auto wrecking yards, railroad yard or tracks, landfills). Coordinate with Regional Office 8 of the EPA and the Utah Department of Environmental Quality for assistance with identifying known or potential hazardous waste sites. Sources of information on hazardous waste are listed in Table 27.

Table 27. Hazardous Waste Site Contact/Resource Information

Agency	Address	Telephone/Fax/Web Address
Utah Division of Environmental Response & Remediation	168 North 1950 W., Building #2, First Floor Box 144840 Salt Lake City, UT 84114	801-536-4100 801-359-8853 fax http://environmentalresponse.utah.gov/
Utah Division of Solid and Hazardous Waste	Mailing address: PO Box 144880 Salt Lake City, UT 84114-4880 Physical address: 288 North 1460 West, 4th Floor Salt Lake City, UT 84116	801-538-6170 801-538-6715 fax http://www.hazardouswaste.utah.gov/
Environmental Protection Agency,Region 8	999-18th St., Suite 300 Denver, CO 80202	303-312-6312 800-227-8917 (Region 8 states only)

Note: For a list of underground storage tanks in Utah, please visit the State of Utah's website: http://undergroundtanks.utah.gov/ustcomp/ust_lust_lists/ust_lists.htm

An Initial Site Assessment (ISA) may be conducted (but is not required) during the preliminary visit to the proposed project site to locate areas of contamination. If known or potential waste sites are identified, a Preliminary Site Investigation (PSI) will be needed to determine the chemical make-up of the contamination and size of the contamination field.

Affected Environment

Obtain the site assessment and provide a thorough description of each hazardous waste site. Report any known information about the contaminants. The locations should be identified in a table format and clearly marked on a map showing their relationship to the alternatives under consideration.

Impacts

If a known or potential hazardous waste site is encountered by an alternative, information about the site, the potential involvement, and impacts and public health concerns of the affected alternative(s) should be addressed. Consideration should be given to direct impacts from hazardous waste sites on groundwater and worker safety. Indirect impacts should also be described such as possible changes to the groundwater table or gradient, which could change the potential for contamination through migration. Lastly, consent decrees, enforcement orders, and regulatory impacts, especially local requirements must also be addressed, when applicable.

Avoidance, Minimization, and/or Mitigation Measures

Address each site documented in the affected environment section and provide information on whether the site will be avoided or not. If a site cannot be avoided, provide information justifying why the site will be encountered, and discuss whether a mitigation option (e.g., hazardous waste site clean up or removal of the UST) is available.

Prepare a bulleted list of proposed mitigation measures; early coordination with regulatory agencies, property owners, and local jurisdiction may open up opportunities to mitigate environmental impacts. Address and resolve the issues raised by the public and government agencies.

Cross-reference the Water Resources section, particularly any identified mitigation measures for surface and groundwater impacts.

Visual Quality

Regulatory Setting, Studies and Coordination

There are no specific FHWA regulations requiring the inclusion of a visual impact analysis in environmental documents. However, NEPA requires that consideration be given to determine the effects of proposed projects on the quality of the human environment.

FHWA has developed a guidance document for assessing the visual impacts of highway projects for NEPA documents based on characterizing landscape quality, viewsheds and viewer groups. These guidance documents can be found on FHWA's website at: http://environment.fhwa.dot.gov/guidebook/chapters/v2ch1.htm. Potential impacts on scenic byways must also be addressed. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) mandated creation of a Scenic Byways Program. FHWA on May 18, 1995 published an interim policy in the Federal Register, which established the criteria for designating scenic byways, based upon their scenic, historic, recreational, cultural, archeological, and/or natural intrinsic qualities.

Notice of FHWA interim policy for the National Scenic Byways Program can be found at http://frwebgate5.access.gpo.gov/cgibin/waisgate.cgi?WAISdocID=646028108783+0+0+0&WAISaction=retrieve.

Affected Environment

The visual quality assessment should consider views by drivers, residents, and workers in local businesses. Researchers have shown that the view from the road is the basis for much of what people know about the everyday environment and for their mental image of the landscape. The view toward the road has only more recently been systematically considered, but it is equally important. Projects must be carefully planned to ensure that pleasing vistas for travelers are not developed at the expense of views from surrounding areas.

Utah's scenic byways are a system of 33 routes statewide that offer outstanding beauty. Table 28 identifies these routes:

Table 28. Utah Scenic Byways.

Utah Scenic Byways	Corresponding Highway Number
Bear Lake Scenic Byway	U-30
Beaver Canyon Scenic Byway	U-153
Bicentennial Highway	U-95
Big Cottonwood Canyon Scenic Byway	U-152
Brian Head-Panguitch Lake Scenic Byway	U-143
Capitol Reef Country Scenic Byway	U-24
Cedar Breaks Scenic Byway	U-148
Dead Horse Point Mesa Scenic Byway	U-313
Eccles Canyon Scenic Byway	U-264
Fishlake Scenic Byway	U-25
Huntington Canyon Scenic Byway	U-31, U-264, U-96
Indian Canyon Scenic Byway	US-191
Indian Creek Corridor Scenic Byway	U-211
Kolob Fingers Road Scenic Byway	No Number
Kolob Reservoir Road	No Number

Little Cottonwood Canyon Scenic Byway	U-210
Markaguant High Plateau Scenic Byway	U-14
Mirror Lake Scenic Byway	U-150
Monument Valley to Bluff Scenic Byway	US-163
Mt Carmel Scenic Byway	US-89
Nine Mile Canyon Backway	No Number
Ogden River Scenic Byway	U-39
Potash-Lower Colorado River Scenic Byway	U-279
Provo Canyon Scenic Byway	US-189, U-113
Trail of the Ancients	US-163, U-95, U-261, U-163, U-262
Upper Colorado River Scenic Byway	U-128
Zion Park Scenic Byway	U-9
Dinosaur Diamond Prehistoric Highway	I-70, US-191, US-6, US-40, U-128
The Energy Loop: Huntington & Eccles Canyons Scenic Byways	U-96, U-31, U-264
Flaming Gorge – Uintas Scenic Byway	US-191, U-44
A Journey Through Time Scenic Byway	U-12
Logan Canyon Scenic Byway	US-89
Nebo Loop Scenic Byway	No Number

Note: The above list may be incomplete, or contain byways that overlap.

Table 29. Utah Scenic Byways Contacts

Agency	Address	Telephone/Fax/Web Address
Utah Travel Council, State Byway Coordinator	Council Hall/Capital Hill 300 N. State Street Salt Lake City, UT 84114	801-538-1479 801-538-1030 801-538-1399 fax
Tourism Office, UTAH!	Council Hall/Capitol Hill Salt Lake City, UT 84114	801-538-1030 801-538-1399 fax
Utah Department of Transportation	4501 S. 2700 W. Salt Lake City, UT 84119	801-965-4185 801-965-4551 fax
FHWA – Utah Division	2520 W. 4700 S., Suite 9A Salt Lake City, UT 84118	801-963-0182 801-963-0093 fax

Impacts

Visual impacts occur when there is a detrimental effect on the perceived beauty of a place or structure. Evaluate construction-related impacts to visual resources, including both views mentioned above. It can also be said that impacts occur when there is a reduction

in visual quality resulting from a build alternative (verses a no-build alternative). The visual impact assessment should include temporary and permanent visual impacts of the proposed action. During project development, visual impacts, including aesthetics, light, and glare, should be considered by evaluating the view from the road as well as the view toward the road. Because of the public nature and visual importance of transportation projects, both negative and positive visual impacts must be adequately assessed and considered during project development.

Where appropriate, provide a cross-reference to the Historic and Archaeological Resources and/or Community Character and Community Cohesion impacts sections for additional discussion on visual resource impacts.

Avoidance, Minimization, and/or Mitigation Measures

As discussed under Land Use, UDOT's CSS principles should be examined to determine if special design consideration need to be evaluated to avoid visual impacts. Identify steps that have been taken to address the CSS principles.

Mitigation may reduce or eliminate the visibility of the project or alter the project's effect on the scenic or aesthetic resource in some way. Mitigation strategies can be categorized into three general groups as outlined below.

- Professional Design and Siting: A properly sited and designed project is the best way to mitigate potential impacts. Under optimum circumstances a project can be sited in a location that precludes the possibility of having an aesthetic resource within its viewshed. Also, through sensitive design treatment, elements of particular concern may be sited or dimensioned in a way that reduces or eliminates impacts on significant resources. Sometimes circumstances prevent the realization of optimal siting and sometimes engineering, economic, or other constraints preclude optimum dimensioning or other appropriate design treatments.
- Maintenance: How a landscape and structures in the landscape are maintained has an aesthetic implication. "Eyesores" result from neglect. Therefore, maintenance should be part of any mitigation strategy.
- Offsets: Correction of an existing aesthetic problem identified within the viewshed of a proposed project may qualify as an offset or compensation for project impacts. A decline in the landscape quality associated with a proposed project can, at least partially, be "offset" by the correction. In some circumstances a net improvement may be realized.

Energy

Regulatory Setting, Studies and Coordination

There are no specific regulatory requirements regarding energy for the preparation of an EA for highway projects.

Affected Environment

Discuss in general terms the energy requirements and conservation potential of various alternatives under consideration. Discuss energy consumed in the operation of vehicles and maintenance of facilities, and energy invested in construction activities as well as resources such as materials used in construction.

Impacts

Where the proposed project will cause no net increase in energy consumption, say so and briefly explain why.

If the proposed project will cause an increase in energy consumption, conduct an energy analysis. Compare BTUs or quantities of fuel consumed among alternatives and compare with the no-build. Factors to consider:

- Direct energy consumed in operation of vehicles predicted to use the facility, compared to existing facility (if any). Identify payback period. Consider effects of increased or decreased smoothness of traffic flow.
- Energy consumed in maintenance of the facility, compared to existing facility (if any).
- Energy consumed in the region as a result of operation of the facility, compared to existing energy consumption. Consider effects of increased or decreased smoothness of traffic flow, vehicle miles traveled, and growth generated by the project.
- Impact on production of energy, if any.
- The combined impact of energy used during construction versus energy used (or saved) during operation. Does one affect the other? Are they substantial when added together?

The actions relationship and consistency with any state and/or regional energy plan should also be indicated (Table 29).

Table 30. Utah Energy Contact/Resource Information

Agency	Address	Telephone/Fax/Web Address
Utah Energy Office	1594 W. North Temple, Suite 3110 PO Box 146480 Salt Lake City, UT 84114	801-538-5428 800-662-3633 (Utah Only) 801-538-4795 fax

Avoidance, Minimization, and/or Mitigation Measures

Provide a bulleted list of mitigation measures. The following list provides examples of ways to mitigate energy impacts.

- The primary contractor shall be responsible to ensure that all construction equipment is properly tuned and maintained

- Minimize idling time to 10 minutes – saves fuel and reduces emissions.
- Utilize existing power sources (e.g., power poles) or clean fuel generators rather than temporary power generators

Construction Impacts

Construction impacts should be discussed throughout an EA as it relates to each specific resource. For example, describing the temporary construction noise impacts on the environment in the noise section of an EA. However, if construction impacts have not been discussed previously and/or the project is likely to have numerous construction impacts, a separate construction impacts section is appropriate. Potential items to discuss include construction phasing/schedule/work hours, noise, air quality (dust), access issues (pedestrian, cyclists), detours, emergency vehicle access and traffic delays. Remember to discuss optional disposal sites, if applicable.

Cumulative Effects

40 CFR 1508.7 defines Cumulative Effects as follows: "Impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." Cumulative effects are intended to describe the sum total of all impacts to a particular resource that have occurred, are occurring and will likely occur as a result of any action or influence, including the direct and reasonably foreseeable indirect effects of the proposed action.

A good resource for understanding cumulative effects analysis is CEQ Handbook: Considering Cumulative Effects under the National Environmental Protection Act (January 1997). This handbook presents the results of research and consultations by CEQ concerning the consideration of cumulative effects. It introduces the complex issue of cumulative effects, outlines general principles, presents useful steps, and provides information on methods of cumulative effects analysis and data sources. The handbook includes an 11-step process for analyzing cumulative impacts.

The careful consideration of cumulative effects is becoming increasingly important to making a reasoned and informed project decision.

Scoping

Scoping for the cumulative effect analysis should be conducted during the overall scoping process for the project to involve cooperating and resource agencies in identifying relevant resources to consider, geographic boundaries, time frames for the analysis, as well as analysis methodologies.

Using only existing readily available data, identify resources (natural environmental resources, historic structures, parklands, community facilities, etc.) that are directly impacted by each alternative.

For each resource, determine data availability/unavailability, reasons for data unavailability, data unit (i.e., countywide, statewide, watershed, etc.), data sources and proposed analysis methodologies.

Determine the boundaries of the area to be included in the cumulative impact analysis. The area should include the physical footprint of the preliminary/conceptual alternatives; area of traffic influence; the limits of the resources that are directly impacted by the preliminary/conceptual alternatives or potentially impacted by indirect development; census tracts that are affected by the proposed alternatives; City and County Planning areas; areas where existing and/or proposed sewer and water services are located; and areas defined by special designations such as protected nature preserves, etc.

Establish a general time frame that covers the past, present and reasonably foreseeable future for the project cumulative effects. A period of 30 years is often used as a past time frame. The project's design year should be used for the reasonably foreseeable future time frame, because design year traffic is based on future land use assumptions.

Describing the Affected Environment

Collect the readily available natural environmental and socio-economic data identified during scoping. This includes, but is not limited to, information related to resources, other projects, land use, development, etc. It is also important to discuss whether the proposed alternatives have full or partial controls of access.

Identify the regulations and laws governing each resource (i.e., agricultural preservation zones, Section 404 of the Clean Water Act, etc.). In addition to state and federal regulations, contact local jurisdictions to determine their applicable regulations and ordinances.

Using the existing readily available data accumulated from the resource agencies and others, prepare maps showing the natural and socio-economic resources (i.e., wetlands; floodplains; rare, threatened or endangered species; parks; known historic sites; communities; etc.) within the cumulative analysis area. The scale of this map should be the same as that used for the land use mapping, so that they can be easily overlaid.

Collect and display on a map the land use and proposed development information for the project's cumulative analysis time frame. It is important to map the information on layers that can be easily used for overlaying. Land uses are generally identified as agricultural, residential, business, industrial, open space, parkland, etc. and include schools, roads, etc.

If major transportation projects have been built in the past time frame, the analysis should briefly summarize those projects' impacts to socio-economic or natural resources of concern, since they would be considered cumulative effects to a resource(s).

Discuss in detail any local zoning implications and identify changes in land use and level of development that may occur as the result of each project build alternative retained for detailed study. Clearly identify known development proposals/land use changes that can only occur if a proposed project alternative is built. In this scenario, developers or the local government should indicate planned development that will not proceed without approval of a specific project or transportation alternative.

Identify other development (public or private) that is not dependent on the project alternatives. In special cases (for certain complex projects or if local jurisdictions, agencies, or special interest groups disagree that a particular land use will or will not occur), an "expert land use panel" can be formed to identify future land use scenarios. The use of these panels should be considered on a project-by-project basis.

Determining Environmental Consequences

Select an appropriate method to use to evaluate cumulative effects. For transportation projects, the most appropriate methods (from simplest to the most complex) typically include: interviews, matrices, overlays, trends analyses and modeling. The methods can be used individually or in combination and sometimes can overlap each other.

Interviews - Interviews are useful for gathering a wide range of information on multiple actions and resources. They may take the form of one-on-one interviews, questionnaires, or brainstorming sessions with panels of experts. The weakness of this method is that effects can usually not be quantified and results are unavoidably subjective.

Matrices -This method uses a tabular format to organize and quantify the interactions between various alternatives and elements of the environment. They are useful to present and compare quantitative findings of modeling and mapping and qualitative findings from subjective techniques. The primary weakness of this method is that it does not address cause-effect relationships and can be very cumbersome.

Overlay -This method generally involves overlaying present and future land use maps over the existing environmental resources and quantitatively or qualitatively describing the impacts to those resources. It can be used directly evaluate cumulative effects by identifying areas where the combined effects will be greatest. The method does not explicitly address indirect effects and relies heavily on mapping accuracy.

Trends Analysis – Trend analysis assesses the status of resources, ecosystems and human communities over time and usually results in the graphic projection of past or future conditions. It is very effective at showing the historical context that is critical to assessing cumulative effects. For example, a review past and current census data to assess population and employment trends will reveal patterns of growth (development) or decline in certain areas during certain time frames.

Modeling – Modeling is a powerful method most useful for quantifying the cause-and-effect relationships leading to cumulative effects. The downside of this technique is that it is usually very data intensive and expensive to conduct. Models are frequently used to assess the direct and cumulative effects of a project on traffic, air quality, water quality, floodplains, and the regional economy.

Based on the above methods, analyze and identify effects to resources from other actions (past, present and future) due to each alternative. These effects will then be added to the direct effects associated with each alternative to arrive at the total cumulative impact on each resource for each build alternative being studied.

The results of the cumulative impact analyses will be summarized for inclusion in a separate section of the Environmental Consequences chapter of the environmental document. It is important that a cumulative impact discussion be provided for each build alternative.

If a project does not result in direct effects on a resource, then no further analysis of that resource is required. The justification for this assessment must be fully documented.

If there is insufficient readily available data to analyze cumulative effects on a particular resource, then document the justification for not continuing the cumulative analysis.

Also, if the cumulative effects on a resource are not an important issue (meaning not relevant to decisions about the proposed action and alternatives), then document the

justification for not continuing the cumulative analysis for that resource. The cumulative analysis "should 'count what counts', not produce superficial analyses of a long laundry list of issues that have little relevance to the effects of the proposed action or the eventual decisions" (CEQ's, Considering Cumulative Effects under the National Environmental Policy Act, p.12).

The CEQ handbook is available via FHWA's website
http://environment.fhwa.dot.gov/guidebook/chapters/V2ch6.htm

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Chapter 4
Section 4(f) Evaluation

Early coordination and consultation with the FHWA Division office is recommended to ascertain whether Section 4(f) applies to the specific project being proposed and for assistance in the identification of resources eligible for protection under Section 4(f).

An excellent resource for information on Section 4(f) is the FHWA website where the FHWA Section 4(f) Policy Paper, updated in March 2005 can be found. It provides comprehensive guidance on when and how to apply the provisions of Section 4(f) for transportation projects. The policy paper can be found at http://environment.fhwa.dot.gov/projdev/4fpolicy.htm. This website also includes links to Section 4(f) regulations and other information regarding Section 4(f).

Another helpful resource regarding Section 4 (f) is http://www.section4(f).com.

Section 4(f) of the Department of Transportation Act of 1966 (as amended and codified in 49 USC 303) prohibits the Secretary of Transportation from approving any program or project that:

> …requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance as determined by federal, state, or local officials having jurisdiction thereof, or any land from an historic site of national, state, or local significance as so determined by such officials unless (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park, recreation area, wildlife and waterfowl refuge, or historic site resulting from such use. (Department of Transportation Act of 1983, 49 USC 303)

Section 4(f) applies to historic properties and archaeological resources only when the property or resource is included on or eligible for listing on the National Register of Historic Places (NRHP). Section 4(f) only applies to archaeological sites that are on or eligible for inclusion on the NRHP and warrant preservation in place. Section 4(f) does not apply if it is determined that the archaeological resource is important chiefly because of what can be learned by data recovery (even if it is decided that the resource would not be recovered) and has minimal value for preservation in place.

Public trails, school playgrounds open to the public, and planned facilities (formally designated as a park, recreation area or refuge) on land that is publicly owned and that may be included in a city or county master plan, can also qualify as resources eligible for protection under Section 4(f). Consult with FHWA if you are unsure whether a resource qualifies.

If it is determined that a property or properties qualifies for protection under Section 4(f) are located within the project study area, determine whether the project would "use"

those properties. The term use refers to either a direct or constructive use of the property. The uses as defined in 23 CFR 771.135(p), are described as follows:

- Direct use occurs when
  - The property is permanently incorporated into a transportation facility,
  - When there is a temporary occupancy of land that is adverse in terms of the statute's preservationist purposes as determined by the criteria in paragraph (p)(7) of this section; or
  - When there is a constructive use of land.
- Constructive use occurs when the transportation project does not incorporate land from a section 4(f) resource, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under section 4(f) are substantially impaired. Substantial impairment occurs when the protected activities, features or attributes of the resource are substantially diminished.

  Depending on the resource, a constructive use would involve permanent and severe noise, vibration, aesthetic, or access impacts. A determination of constructive use is rare and requires consultation with FHWA early in the project development process. As outlined in 23 CFR 771.135 (p)(4), a constructive use of a protected resource occurs under any of the following situations.

- The projected noise level increase attributable to the project substantially interferes with the use and enjoyment of a noise-sensitive facility of a resource protected by section 4(f), such as hearing the performances at an outdoor amphitheater, sleeping in the sleeping area of a campground, enjoyment of a historic site where a quiet setting is a generally recognized feature or attribute of the site's significance, or enjoyment of an urban park where serenity and quiet are significant attributes.
- The proximity of the proposed project substantially impairs the aesthetic features or attributes of a resource protected by section 4(f), where such features or attributes are considered important contributing elements to the value of the resource.
- The project results in a restriction on access, which substantially diminishes the utility of a significant publicly owned park, recreation area, or historic site.
- The vibration impact from operation of the project substantially impairs the use of a Section 4(f) resource, such as projected vibration levels from a rail transit project that are great enough to affect the structural integrity of a historic building or substantially diminish the utility of the building.
- The ecological intrusion of the project substantially diminishes the value of wildlife habitat in a wildlife or waterfowl refuge adjacent to the project or substantially interferes with the access to a wildlife or waterfowl refuge, when such access is necessary for established wildlife migration or critical life processes.

An example of constructive use would be excessive noise near an amphitheater. NOTE: Consult with FHWA early on in the preliminary draft process to determine whether constructive use may be an issue.

Some projects may require a temporary occupancy of a Section 4(f) resource that is minimal and temporary in nature, such as a right of entry, temporary easements or other

short-term arrangements. According to 23 CFR 771.135(p)(7): "A temporary occupancy of land is so minimal that it does not constitute a direct use within the meaning of Section 4(f) when the following conditions are satisfied."

- Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land.
- Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) resource are minimal.
- There are no anticipated permanent adverse physical impacts, nor will there be interference with the activities or purpose of the resource, on either a temporary or permanent basis.
- The land being used must be fully restored, i.e., the resource must be returned to a condition which is at least as good as that which existed prior to the project.
- There must be documented agreement of the appropriate federal, state, or local officials having jurisdiction over the resource regarding the above conditions.

If it is determined that the project would only require a temporary occupancy of a Section 4(f) resource, this information can be included in the Chapter 3, Recreation Resources discussion of the resource, with the documentation of coordination and agreement with the officials having jurisdiction over the resource in Chapter 6, Comments and Coordination or in the appendix.

If it is determined that the project requires a use of a Section 4(f) property, review the requirements for a Programmatic Section 4(f) evaluation to see if the project meets the conditions necessary to use a programmatic evaluation. Programmatic evaluations streamline the documentation, approval process and interagency coordination required for a Section 4(f) evaluation, however all Section 4(f) requirements still apply. There are five approved Nationwide Programmatic Section 4(f) Evaluations:

- Independent Walkway and Bikeways Construction Projects
- Historic Bridges
- Minor Involvements with Historic Sites
- Minor Involvements with Parks, Recreation Areas and Waterfowl and Wildlife Refuges
- Net Benefit 4(f) Programmatic

Information on programmatic evaluations can be found at:
http://environment.fhwa.dot.gov/projdev/4fnspeval.htm

And on UDOT's website at: http://www.udot.utah.gov/index.php/m=c/tid=288.

The FHWA Division Administrator or Division Engineer is responsible for reviewing each project to determine if it meets the criteria necessary for a specific programmatic evaluation. FHWA will make the determination and document the items reviewed. The written analysis and determinations are then combined in a single document, placed in the project record and made available to the public upon request. In this case there would not be a separate Section 4(f) evaluation in the document.

State and local governments often obtain grants through the Land and Water Conservation Fund Act (LWCFA) to acquire or make improvements to parks and recreation areas (16 USC Sections 460-4 through 460-11, September 3, 1964, as amended). Section 6(f) of the act prohibits the conversion of property acquired or developed with these grants to a non-recreational use without the approval of the U.S. Department of the Interior's (DOI's) National Park Service. Section 6(f) directs DOI to ensure that replacement lands of equal value (monetary), location, and usefulness are provided as conditions to such conversions. Consequently, where such conversions of Section 6(f) lands are proposed for transportation projects, replacement lands must be provided. Results of coordination with the public official having jurisdiction over the land and documentation of the National Park Service's position on the 6(f) land conversion should be included in the discussions of the resource and in the coordination section of the Section 4(f) evaluation.

The template includes a typical outline for organizing the Section 4(f) evaluation.

Contents of the Section 4(f) Evaluation

Introduction

The introduction sets the regulatory scene and helps the reader understand the requirements of Section 4(f). This section should include the boilerplate language provided as an example in the template. This includes the definitions pertaining to Section 4(f) provided above. Do not paraphrase the requirements set forth under Section 4(f), provide direct quotes of the regulations.

Description of Proposed Action

Provide a brief description of the proposed action and refer the reader to Chapter 1, Purpose and Need for additional information.

Purpose and Need

Briefly discuss the purpose and need for the project. Refer the reader to Chapter 1, Purpose and Need, for additional detailed information.

Alternatives

Discuss the alternatives for the proposed project, including each build alternative and the no-build alternative. Give enough detail so that the reader can understand the proposed project and alternatives; then refer the reader to Chapters 1 and 2 of the EA for more detailed information.

Section 4(f) Properties

Identify all public and private parks; recreational facilities, wildlife or waterfowl refuges within the project study area or that may be potentially affected by any of the project

alternatives. All archaeological and/or historic sites within the APE for the project should be analyzed to determine whether they are eligible for protection under Section 4(f). If Section 4(f) resources have been identified in the project study area or have the potential to be affected by any of the build alternatives, then include the following information (see template) for each resource that may be used by any of the alternative(s) under consideration.

Use of Section 4(f) Properties

This section evaluates direct and constructive use of Section 4(f) properties as a result of the proposed action. Describe the use required by each alternative for all the resources that qualify as Section 4(f) resources. It is typical to discuss direct use first, then constructive use. The constructive use section is based on the categories listed above in the definition. If an alternative or alternatives use more than one Section 4(f) resource, a summary table is useful in comparing the various uses by alternative. An example of a summary table is included in the template. Any use of a resource that can be quantified (take of property, noise, etc) should be quantified for the evaluation. Use's that are difficult to quantify, such as visual or other aesthetic qualities should be described.

Direct Use

If a direct use of the Section 4(f) property is required by any of the build alternatives, include in the evaluation the size of land required in acres or square feet, a description of the area required including location on the property, severity of impact and information regarding the functions or activities affected by the use of the land. Also include a description of any agreements or coordination that may have occurred with the agency having jurisdiction over the resource.

Constructive Use

Constructive use is only possible when there is no permanent incorporation or temporary occupancy of the type that constitutes a use of a section 4(f) resource by a transportation project. Constructive use only occurs when (including mitigation) the proximity impacts are so severe that the activities, features or attributes that qualify the resource for protection under Section 4(f) are substantially impaired. Substantial impairment occurs when those activities, features or attributes are meaningfully reduced or lost. The degree of impact should be determined in coordination with the officials having jurisdiction over the resource. Constructive use determinations are rare and if a constructive use determination is likely, the FHWA Division Office must consult with FHWA Headquarters during development of the preliminary draft evaluation. Include a description of any mitigation that may be proposed to lessen any possible impacts.

- Noise: does the projected noise level increase attributable to the project substantially interfere with the use and enjoyment of a resource? Quantify the noise levels including existing and projected levels. Note whether the facility qualifies as a noise sensitive facility, based on FHWA Noise Abatement Criteria, 23 CFR 772 as in Chapter 3 in the noise section.
- Aesthetics is the value of the resource based on its visual setting? Will the project substantially interfere with the visual setting of the resource?

- Access: does the project affect or change access to the resource on a permanent or temporary basis? Describe how access to the resource will be maintained and if users will have to access the resource in a different manner. Describe all aspects of any interruption to access to the resource.
- Vibration: does vibration from operation of the project have the potential to substantially impair the use of a Section 4(f) resource? Projected vibration levels from pile driving or heavy truck hauling may be great enough to affect the structural integrity of a historic building or substantially diminish the utility of the building.
- Ecological intrusion: does the project substantially diminish the value of wildlife habitat in a wildlife or waterfowl refuge adjacent to the project or substantially interfere with the access to a wildlife or waterfowl refuge, when such access is necessary for established wildlife migration or critical life processes?

Cross-reference other sections of the EA as appropriate.

Summary of Use of Section 4(f) Properties by Alternative

If there is more than one Section 4(f) resource in the project study area and/or more than one alternative, compile a summary table comparing the use of Section 4(f) resources by alternative. An example is provided in the template.

Avoidance Alternatives for Section 4(f) Properties

For each Section 4(f) resource, identify and discuss any alternatives that would avoid the use of the Section 4(f) resource, including the No-Build. The descriptions should include a description of aspects of the alternative that can be altered to avoid the resource, such as new alignments or changes in location of the alignment of the alternative, design shifts or variations, reduction of the right of way, and so on. If one of the alternatives does not require a use of the resource, state this in the discussion. In the final EA Section 4(f) Evaluation, discuss whether the avoidance alternatives described are prudent and feasible. If they are not prudent and feasible, discuss why they are not. Quantify where possible and be as specific as possible. Include a statement of whether or not there is a feasible and prudent total avoidance alternative. If there is a feasible and prudent total avoidance alternative, it must be selected or an argument for extraordinary magnitude must be made. An avoidance alternative is not prudent and feasible if it results in "unique" problems—unusual factors or when the costs, safety and geometrics, decreased service, community disruption, and or other environmental impacts reach extraordinary magnitude [see 23 CFR 771.135(a)(2)]. Prudent and feasible refers only to avoidance alternatives and not to minimization measures.

Measures to Minimize Harm to Section 4(f) Properties

Discuss all possible measures that are available to minimize the impacts on each property. Document all efforts undertaken even if they seem relatively minor. Summarize and refer readers to the EA as appropriate.

Measures should be developed in consultation with the official of the agency having jurisdiction over the land and usually involves replacement land, replacement facilities or monetary compensation to enhance the remaining land.

For the final EA Section 4(f) Evaluation include a letter from the official having jurisdiction over the resource concurring with the proposed measures.

Coordination

Describe and document the coordination efforts with the agency having jurisdiction over each resource, the Department of the Interior (NOTE: they have 45 days to respond), and, as appropriate, the U.S. Department of Agriculture (for National Forest System Lands) and the Department of Housing and Urban Development (property for which HUD funding was used). Coordination with these agencies is the responsibility of FHWA and should occur before circulation of the draft environmental document and again, if needed, before the final environmental document. Coordination should center on:

- Significance of property
- Primary purpose of the land
- Proposed use and impacts
- Proposed measures to avoid and /or minimize harm

Include copies of all correspondence documenting the above coordination.

Section 4(f) Determination

Do not include a determination in the draft EA Section 4(f) evaluation. The determination that there is no feasible and prudent alternative to the use of the resource is made after the draft has been circulated, and is included in the final evaluation. See the template for the specific text for the Section 4(f) determination.

If a Section 6(f) resource is included in the Section 4(f) evaluation, include a statement under a separate heading in the final EA.

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Chapter 5
Mitigation Commitments

A list of environmental commitments (if any) should be developed and presented in this section of the EA. The list of commitments should consist of proposed mitigating measures, commitments made to resource agencies or other agencies with permitting authority, and any other environmental or design commitments made on behalf of the project.

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Chapter 6
Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including project development team meetings, interagency coordination meetings (continue list as appropriate). This chapter summarizes the results of the UDOT's efforts to fully identify, address and resolve project-related issues through early and continuing coordination:

Address the following topics as appropriate using logical headings and subheadings:

Scoping Process

Discuss the agency and public scoping process (if formal scoping was conducted). Describe the process, including meeting dates, attendees, issues raised and comments received.

Consultation and Coordination with Public Agencies

Identify which public agencies were contacted during the project's development. For each agency, provide a chronology of all meetings, workshops, hearings, etc. that the agency participated in (If this is an extensive list, it can be a combined list for all agencies and be moved to the back of the chapter.). Describe the results of the coordination to date; in other words, document critical decisions. If the agency has taken a position on the project or an issue associated with the project, state the agency's position. Describe the status of any needed approvals or permits from the agencies. Note: The level of detail provided for each item above should be commensurate with the controversy and complexity of the project.

Include correspondence with agencies, e.g. concurrence letters, etc. at the end of this chapter. Larger approval documents such as the Biological Opinion, the MOA for cultural resources, etc. should be included in the back of the document as appendices.

Public Participation

Describe the public participation methods used for the proposed project. Methods could include participation on citizen advisory committees, mailing lists, newsletters, newspaper notices/articles, public meetings/workshops, and web-based information. Include dates when applicable. Describe the results of the public participation process—number of attendees, comments received, issues raised, etc. If a public hearing was held provide the following:

- Date, time and location of hearing
- Type of hearing
- Number of attendees
- Number of written comments
- Number of comments taken by court reporter
- Summary of meeting outcome, issues raised, etc.

More information on public hearing standards is located in the UDOT Environmental Process Manual of Instruction:

http://www.dot.utah.gov/esd/manuals/environmental/EnvironmentalManual.htm

Comments and Responding to Comments

If comments are received on the EA during the public availability period and/or at the public hearing, the EA must be modified to reflect all substantive comments and responses to comments. [NOTE: Comments made by FHWA are not to be included in the document.] Comments and responses to comments can either be included in this chapter or as an appendix in the back of the document.

Be sure that comment letters and other comments are shared with FHWA and responses to comments are developed in coordination with FHWA. A response must be made to all substantive comments received on the EA. Options for responding include:

- Modifying the design of the proposed project and reflecting the modifications in the document
- Supplementing, improving or modifying the analysis in the EA
- Making factual corrections; and/or
- Explaining why the comments do not warrant modification to the document and/or proposed project. If this is the case, the response should cite sources, authorities or reasons that support UDOT's position.

If changes are made to the text of the EA as a result of comments received, those changes must be marked in the margins of the document and the responses to comments should contain a reference to the document change.

"Comment noted" is typically not an appropriate response to a substantive issue. Do not use "comment noted" as a way to avoid difficult issues. "Comment noted" is only

appropriate when someone has expressed an opinion, such as "I don't think this project is needed." or "I support alternative XYZ," or when there is simply no other response possible.

Responses to comments should address the issue or concern of the person who is commenting and should be based on facts and/or reasoned judgment. In responding to comments, it is often necessary to engage other members of the internal project development team.

Remember to deal sensitively with public comments. When responding to comments, keep in mind that the person cared enough about the issue to make a comment, a good response requires at least as much care.

If numerous comments are received, the comments and responses may be summarized; however, comment letters from elected officials and federal, state, and local agencies and planning groups should always be included in their entirety in the document, along with appropriate responses.

For purposes of an EA, comments received after the public availability period and up until the final NEPA decision document should also be addressed and considered (NEPA). Consult with the FHWA project team member.

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Appendices

Appendices can include technical studies or reports, copies of correspondence related to the project, graphics, or regulations.